

**EXH. PKW-5C
DOCKET UE-20____
2020 PSE PCORC
WITNESS: PAUL K. WETHERBEE**

**BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION**

**WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION,**

Complainant,

v.

PUGET SOUND ENERGY,

Respondent.

Docket UE-20____

**FOURTH EXHIBIT (CONFIDENTIAL) TO THE
PREFILED DIRECT TESTIMONY OF**

PAUL K. WETHERBEE

ON BEHALF OF PUGET SOUND ENERGY

**REDACTED
VERSION**

DECEMBER 9, 2020

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Montana Hydroelectric PPA Update



EMC Informational
January 23, 2020

Colin Crowley
Origination and Structuring Manager

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Anticipated Recommendation

Anticipated Recommendation: Approval by email to execute fixed price supply agreement with Energy Keepers for clean energy sourced from the Kerr Dam hydroelectric facility in Montana and other specified source generation with emissions factors similar to Kerr Dam. Other supply sources include ACS (Asset Controlling Supplier) systems such as BPA and BC Hydro.

Energy Keepers Draft Confirmation

Term: March 1, 2020 – July 31, 2035 (15 years & 5 months)

Energy Volume: 40 MW

Energy Profile: 7 days X 24 hours

Price: \$ [REDACTED] / MWh firm (WSPP Schedule C, Specified Source)

Delivery point 1: (Q1 & Q4) Kerr Dam. In cases of transmission or unit outages, resupply at BPAT.PSEI or other interchange points connected with PSE's transmission system
Delivery point 2: (Q2 & Q3) Kerr Dam with resupply flexibility for specified source generation at Mid C or interchange points connected with PSE's transmission system

Business Case

- Draft 2019 IRP analysis indicates a significant need for additional CETA compliant resources
- Energy Keeper's deal proposal creates an opportunity to acquire 350,400 MWh / year of firm clean energy supply to make progress towards the 80% CETA compliance target in 2030

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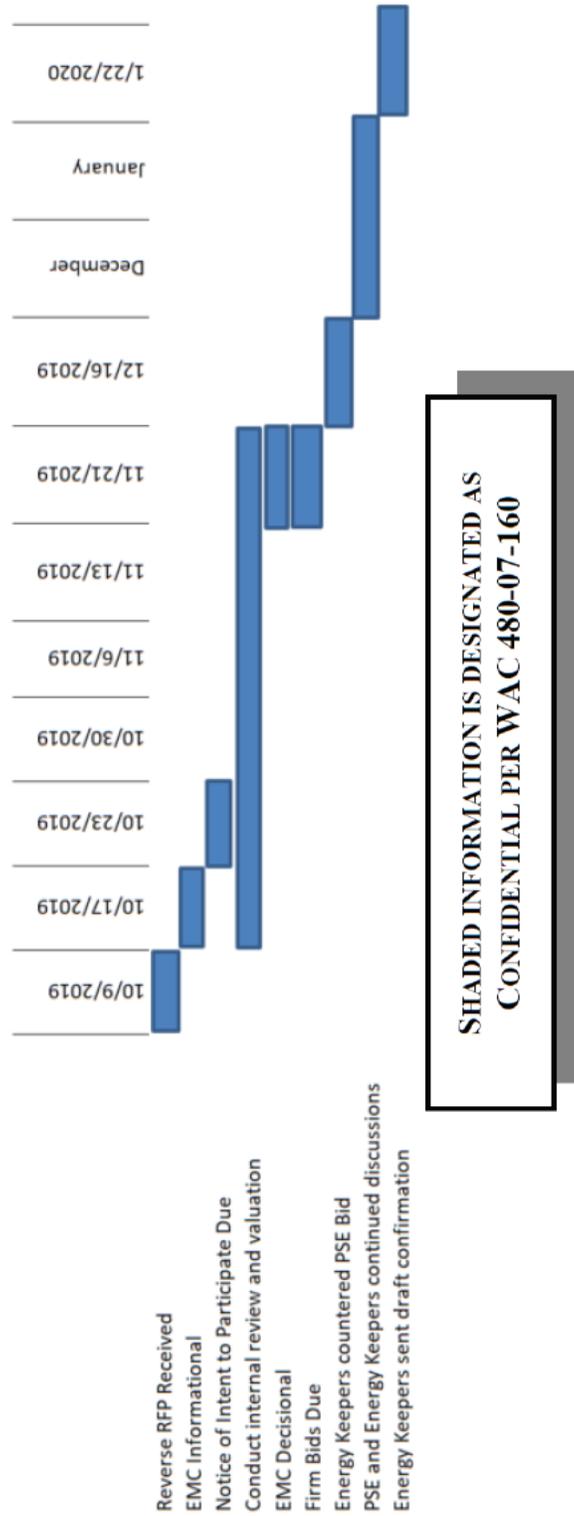


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PSE participated in Energy Keepers RFP for hydroelectric supply from Salish-Kootenai (Kerr) dam in Montana

Update & Timeline

- EMC approved \$ [REDACTED] bid at November 21st meeting
- Energy Keepers rejected PSE's bid and countered with a \$ [REDACTED] indicative offer on December 16th
- Energy Keepers and PSE continued to discuss potential supply arrangements for reliable clean energy supply
- Energy Keepers sent a draft confirmation on 1/22/2020 and indicated that the deal is executable on their end



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Energy Keepers PPA structure presents two identified risks that need to be mitigated or determined to be acceptable

Deal Risk	Description	Mitigation
Interaction of Mid C delivery point flexibility with future renewable generation portfolio	Generation portfolio and BPA transmission usage will change considerably over the next 5-15 years	<ol style="list-style-type: none"> 1) Final determination if Mid C delivery in Q2 and Q3 is an acceptable risk 2) Limit Q2 and Q3 resupply options to deliveries to PSE's transmission system (avoid potential impact to PSE BPA Transmission)
Lack of clarity about Asset Controlling Suppliers (ACS) treatment under CETA	Energy Keepers has identified (Asset Controlling Suppliers) such as BPA, Powerex and Tacoma as potential resupply options for Q2 and Q3.	<ol style="list-style-type: none"> 1) Transfer CETA clean resource definition risk to Energy Keepers 2) Determination that ACS supplier treatment for BPA and BC Hydro systems is an acceptable risk that will be managed through rulemaking

Note: Energy Keeper has requested PSE waive delivery obligations in the event PSE seeks bankruptcy protection and ceases monthly invoice payments



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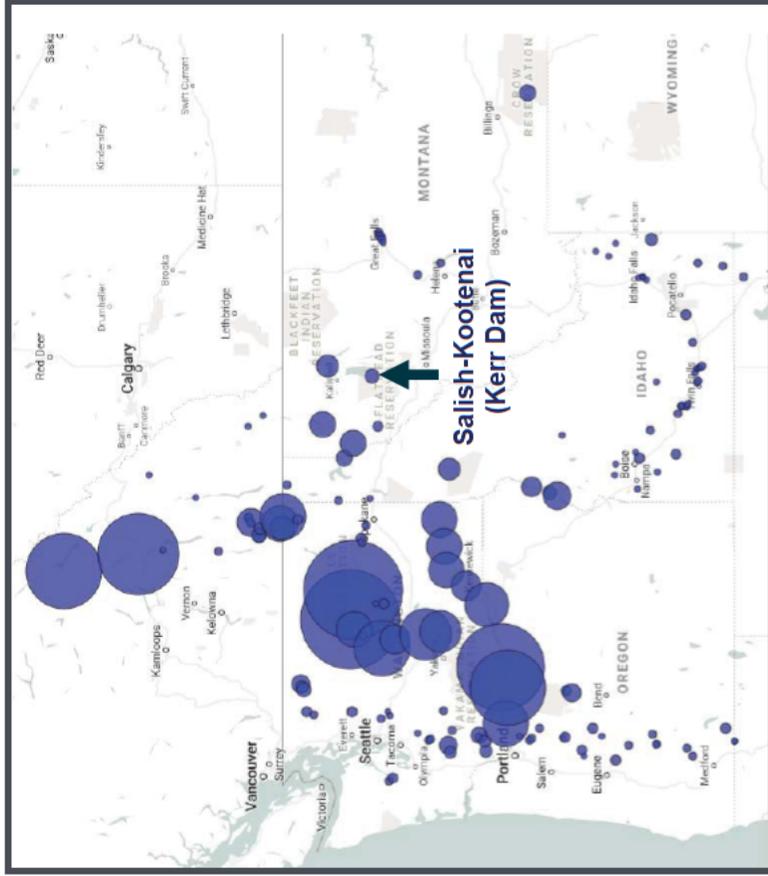
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Appendix



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Salish-Kootenai project has similar generation capacity to Baker project with four times the storage capacity

- Energy Keepers is a tribally owned IPP (Salish and Kootenai Tribes) that owns and operates the 208 MW Salish-Kootenai hydroelectric facility
- Project is the first tribally owned hydro-electric dam in the U.S.
- Flathead Lake represents 1.2M acre-feet of volume
 - Equivalent to Baker Project for generation capacity 215 MW and four times the storage volume
- Purchased from Northwestern Energy in 2014



Source: Northwest Power and Conservation Council



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Model based valuation considers the full social cost of carbon, and does not assign a value for reduced short-term bilateral market reliance

- FP & SI analysts conducted valuation through the Portfolio Screening Model (PSM)
- For the PSM analysis the PPA price was set to the cost of the Sierra Pacific Industries proposal, in process of being executed through the All Source RFP
 - Value was adjusted for transmission costs because SPI is on PSE's system
 - **PSM indicated a portfolio benefit of \$ [REDACTED] at a \$ [REDACTED] PPA cost**
- CETA provides guidance for utilities to consider the social cost of carbon (SCC) for intermediate and long-term resources decisions
 - SCC is a significant value driver (\$36.69)

PSM Results - 15 Year PPA 40 MW

	A	B
	NPV \$ in thousands	Levelized Cost \$/MWH
1	[REDACTED]	[REDACTED]
2	[REDACTED]	[REDACTED]
3	[REDACTED]	[REDACTED]
4	[REDACTED]	[REDACTED]
5	[REDACTED]	[REDACTED]
6	[REDACTED]	[REDACTED]
7	[REDACTED]	[REDACTED]
8	[REDACTED]	[REDACTED]

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Market based valuation considers the forward Mid C energy prices, environmental attributes, and reduction in market reliance

- 10/31/19 Platt's Mid C forward market price of \$35.31 reflects a risk premium for future uncertainty relative to Aurora model prices of \$ [REDACTED]
 - Increased renewable generation with low variable energy cost is captured by Aurora price output
- Increased value of environmental attributes may offset risk of lower future market energy prices
 - Market valuation uses current California carbon price X unspecified rate equal to \$7.70 MWh
 - Model valuation uses SCC [REDACTED] MWh
- PSE staff is discussing methodologies to quantify the value of reducing market reliance
 - Sensitivity was run in PSM of full peak capacity benefit for this PPA yielding [REDACTED] in value
 - Bid value includes a percentage of the full peak capacity benefit to reflect a benefit of reducing short-term bilateral market reliance

Value Stream	Bid Contribution	Description
Energy	\$35.31	100% of 10/31/19 Platt's Mid C forward price marks 2020-34
Environmental Attributes	\$7.70	California 2020 carbon price \$18 mTCO2 x.428 mTCO2/MWh unspecified rate
Market Reliance Reduction	\$ [REDACTED]	Sensitivity run through PSM to 100% peak capacity contribution yields \$ [REDACTED] (\$ [REDACTED]) used as value to contribute to final bid)
Calculated Bid Value	\$ [REDACTED] MWh	

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Short listed All Source RFP proposals provide comparison for Energy Keepers PPA

Short listed RFP resources provide comparison for Energy Keepers PPA: as of 11.21.2019

(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	
List	Solicitation	Resource	Term Start	Term	Energy aMW	Peak Capacity Credit	All-in (incl.Tx) LCOE \$/MWh	Environment Attributes	Notes
1	All Source	Clearwater	12/31/2021	25 years	162 MW	143 MW	\$	Yes	All attributes
2	All Source	Golden Hills Shaped	12/31/2021	20 years	74 MW	77 MW	\$	Yes	All attributes
3	All Source	Sierra Pacific (SPI) Morgan Stanley Sys PPA	1/1/2021	17 years	14 MW	16 MW	\$	Yes	All attributes
4	Bilateral		1/1/2022	5 years	42 MW	81 MW	\$	No	Clean energy with no RECs
5	All Source	BPA Sys PPA	1/1/2022	5 years	N/A	54 MW	N/A	Yes	Capacity Payment + Index
Counterparty RFP		Energy Keepers PPA	1/1/2020	15 years	40 MW	0 MW	\$	Yes	Specified Source

- SPI is the closest comparable to Energy Keeper's PPA relative to term and energy profile
 - SPI and Energy Keepers term are 17 years and 15 years respectively
 - Both proposals have relatively consistent output (flat schedules)
 - SPI has higher value because of peak capacity credit
- Other proposals are not easily comparable because of difference in term, energy profile, and REC treatment

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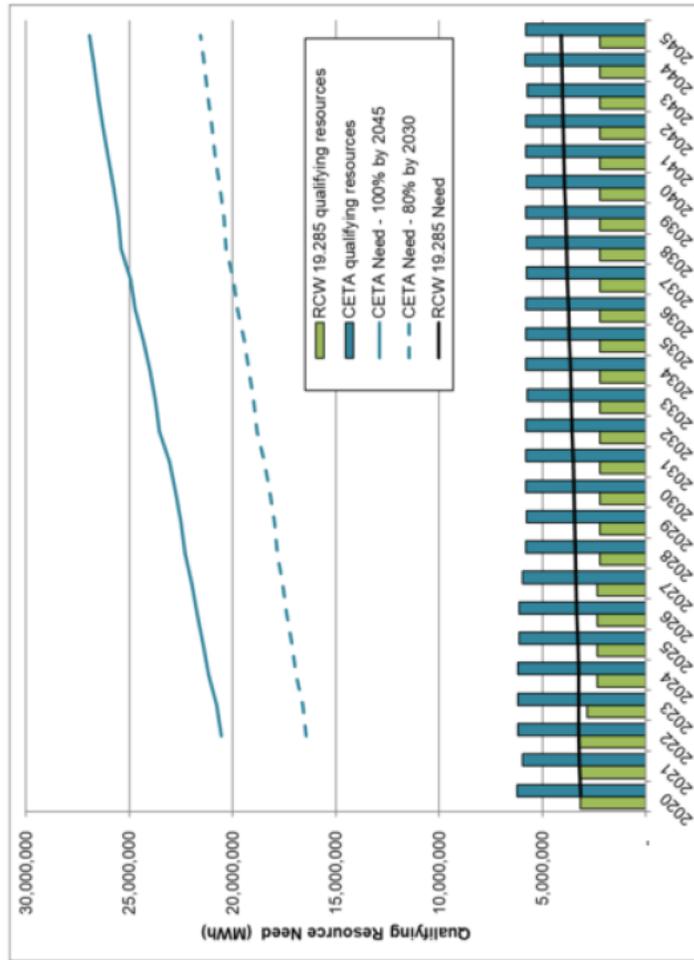


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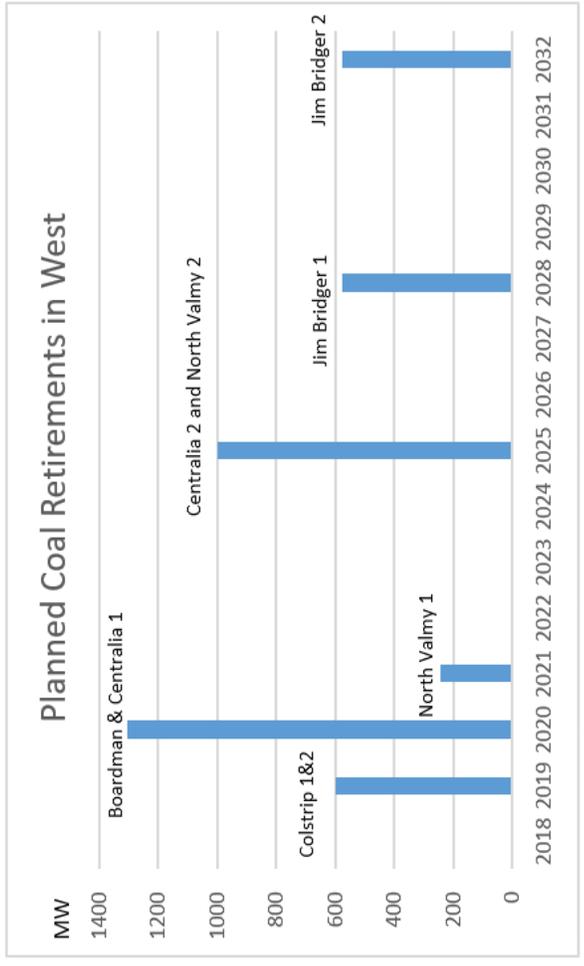
Need for CETA qualifying resources is significant

Figure 6: Qualifying Energy Need to Meet RCW 19.285 and CETA Requirements



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Colstrip shutdown reduces supply in Montana and makes reduction of market reliance a key consideration

- PSE’s 94 MW of Montana transmission relies on short-term bilateral market supply to achieve the 100% peak capacity contribution currently assigned in the IRP
- According to NorthWestern’s 2019 IRP, their generating capacity relative to peak load is smaller than any other investor-owned utilities in the Pacific Northwest
 - Key objective for NorthWestern is to reduce market reliance
 - PSE will be competing with NorthWestern and other utilities for firm supply
- With ~ 4 GW of planned coal retirement, market reliance is an area of concern for PSE and other utilities in the West



Source: Northwest Power and Conservation Council



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PSE's existing transmission capacity from Montana to Washington can be used for PPA

- PSE has 194 MW of existing BPA transmission contracts with BPAT.NWMT as point of receipt and BPAT.PSEI as a point of delivery (see map below)
- Contracted supply at BPAT.NWMT from 2020-21 equals 100 MW
 - Morgan Stanley deal from Colstrip 1&2 short-term RFP
- Anticipated use of BPAT.NWMT transmission from 2022-34 equals 50 MWs
 - Clearwater wind project

Transmission Source (BPAT.NWMT)	Capacity	Transmission Use (BPAT.NWMT)	2020-21	2022-34
Existing Contract	94 MW	Morgan Stanley	-100 MW	0 MW
Talen- new contract	50 MW	Energy Keepers	-40 MW	-40 MW
BPA Redirect (Garrison)	50 MW	Clearwater Wind	0 MW	-50 MW
	194 MW		-140 MW	-90 MW

