

**EXH. ZCY-4C
DOCKETS UE-22___/UG-22___
2022 PSE GENERAL RATE CASE
WITNESS: ZACARIAS C. YANEZ**

**BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION**

**WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION,**

Complainant,

v.

PUGET SOUND ENERGY,

Respondent.

**Docket UE-22___
Docket UG-22___**

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

ZACARIAS C. YANEZ

ON BEHALF OF PUGET SOUND ENERGY

REDACTED VERSION

JANUARY 31, 2022

5-Year Extension of Colville Douglas Slice

EMC Decisional
February 23, 2021



Zacarias Yanez
Commercial Acquisition Manager

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CONFIDENTIAL PER WAC 480-07-160

REDACTED VERSION

Recommendation: Extend Colville slice contract

- Recommendation:
 - Submit a proposal to the Colville Tribe for a 5-year extension of PSE's slice off-take agreement currently valued at \$ [REDACTED] over five years (\$ [REDACTED] per month). Business Initiatives requests authority to negotiate final bid price between \$ [REDACTED] and \$ [REDACTED] per MWh, or between \$ [REDACTED] and \$ [REDACTED] Million, for the term.
- Contract Overview:
 - Colville Tribe's 5.5% slice of the Douglas PUD Wells Hydro Project.
 - Current Price is ~ [REDACTED] /MWh
 - Current term of Colville PPA started on 9/1/2018 and expires 9/30/2021
 - 5.5% slice ~ 42.5 MW and 25.5 aMWh with 370 MWh of storage
 - Offer a 5-year term extension with new expiration 09/30/2026



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2 | February 23, 2021 EMC Decisional: 5-Year Extension of Colville Douglas Slice

REDACTED VERSION

Background of Colville extension

- Colville share is currently in PSE's power portfolio through 9/30/2021
- 5.5% slice ~ 42.5 MW capacity and 25.5 aMW energy with 370 MWh of storage
 - ~226,000 MWh per year of zero emission (CETA compliant) resource
- Douglas PUD, on behalf of the Colville Tribe, contacted PSE and indicated that the PUD would be conducting an auction in Q1 of 2021 to find an off taker for the slice product ahead of the expiration of the current agreement with PSE
- Prior to finalizing the auction, the Colville tribe was contacted by an interested party and an offer was submitted.
- Business Initiatives contacted the Colville Tribe and requested the opportunity to make a competitive bid to extend existing contract.
 - Colville indicated a preference for a five to six year term
 - Business Initiatives would like to propose a five year extension through 09/30/2026
- On **03/03/2021** the tribal council is expected to make a decision to accept the current third party bid, a potential PSE bid, or pursue an auction as originally planned. If PSE does not submit a bid by 03/01/2021 the council may accept the third party bid removing the slice from our portfolio

Reasons why PSE should consider this opportunity ahead of the upcoming 2021 RFP (to be filed by April 1, 2021)

1. Reduces market reliance
 - Provides energy from a specified source to meet PSE's load obligation for winter months
 - IRP is planning to address market reliance, this work is currently in progress, anticipate there will be more information to share at the next EMC meeting
2. Increases portfolio of CETA compliant resources
 - Product is comparable to 70+ MW nameplate wind
3. Provides dispatchable capacity for portfolio flexibility and reserves
 - No incremental integration or transmissions costs, can use existing transmission rights
4. If we don't act now, we might miss the opportunity
 - Mid C hydro owners traditionally sell contractual slices of projects through auctions and bilateral negotiations rather than participating in longer lead time utility RFPs such as PSE's All Source RFP

Bid Price and Comparison

- Business Initiatives recommends a [REDACTED] offer price representing a [REDACTED] premium over forward marks ending on 10/01/2021 through 09/30/2026.
 - Five year offer for total costs of \$ [REDACTED] /MWh or \$ [REDACTED] per year
 - That is an average price of ~ [REDACTED] /MWh
 - Changing premium by a \$1/M [REDACTED] changes annual costs by ~\$ [REDACTED] MM
- Reference Grant Mid-C hydro auction:
 - Held Nov 2020, for 2021 PSE's costs for our 4.33% MP share, ~70MW and [REDACTED] aMW, is \$ [REDACTED] or \$ [REDACTED] per month
 - ~ \$ [REDACTED] /MWh - [REDACTED] /MWh (based on average hydro conditions)
 - 2 [REDACTED] /MWh forward marks on day of Auction were [REDACTED] /MWh
 - Auction cleared with an implied premium over forward marks of ~\$ [REDACTED] to \$ [REDACTED]
 - Portfolio value of about \$ [REDACTED] - \$ [REDACTED] above forward MidC market

Scenario	\$/MWh
Fwd Marks*	28.77
Premium	[REDACTED]
Offer Price	[REDACTED]
Value No Carbon	[REDACTED]
Value CA Carbon	[REDACTED]
Value SCC	[REDACTED]

* Average five year price on 02/02/21



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5 | February 23, 2021 EMC Decisional: 5-Year Extension of Colville Douglas Slice

REDACTED VERSION

Recommendation: Extend Colville slice contract

- Recommendation:
 - Submit a proposal to the Colville Tribe for a 5-year extension of PSE's slice off-take agreement currently valued at \$ [REDACTED] over five years (\$ [REDACTED] per month). Business Initiatives requests authority to negotiate final bid price between [REDACTED] and [REDACTED] per MWh, or between \$ [REDACTED] and \$ [REDACTED] Million for the term.
- Next Steps
 - Negotiate final price not to exceed \$ [REDACTED] per MWh



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6 | February 23, 2021 EMC Decisional: 5-Year Extension of Colville Douglas Slice

REDACTED VERSION

Appendix



Colville One Year Value (Depending on Carbon Cost Assumptions): \$ [REDACTED] to \$ [REDACTED] Million per year

- One Year Value in 2022
- PSE calculated Market Premium over forward MidC marks (\$/MWh) of \$ [REDACTED] no CO2, \$ [REDACTED] CA CO2, \$ [REDACTED] SCC
- **Energy Value**
 - Based on Forward marks as of 02/02/2021
- **Flexibility**
 - **Operation Optimization** – Derived from Plexos value derived by calculating optimal dispatch of PSE portfolio with and without Colville Slice
 - **Flex Value** – calculated by taking difference in flexibility violations with and without Colville Slice
- **Emissions Value**
 - Based on market value of California carbon pricing
 - Social Costs of Carbon
- Does not include additional potential value streams
 - Capacity Credit from reduction in market reliance is additional upside

Value Stream	\$/MWh	Annual \$ (MM)
Energy Value	\$ [REDACTED]	[REDACTED] MM
Portfolio Optimization	\$ [REDACTED]	[REDACTED] MM
Flex Value	\$ [REDACTED]	[REDACTED] MM
Value no CO2	\$ [REDACTED]	[REDACTED] MM
Value CA CO2	\$ [REDACTED]	[REDACTED] MM
Value SCC	\$ [REDACTED]	[REDACTED] MM



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8 | February 23, 2021 EMC Decisional: 5-Year Extension of Colville Douglas Slice

REDACTED VERSION

Draft 2021 Resource Need

- CETA need in 2026: 2,130 GWh
- CETA need in 2030: 6,056 GWh

CETA Need in GWhs	2022	2023	2024	2025	2026	2027	2028	2029	2030
CETA qualifying resources	7,398	9,045	9,087	8,963	9,016	8,824	8,707	8,660	8,691
2021 IRP Draft CETA Energy Target - Mid with Conservation	7,398	8,345	9,297	10,231	11,147	12,058	12,990	13,823	14,747
CETA Need/(Surplus)	0	(699)	210	1,268	2,130	3,234	4,283	5,163	6,056
Incremental Adds needed by Year End	-	210	1,058	862	1,103	1,049	881	892	

- Capacity need in 2026: 369 MW
- Capacity need in 2030: 546 MW

Capacity Need in MW	2022	2023	2024	2025	2026	2027	2028	2029	2030
2021 IRP Mid + PM less 2021 IRP Draft Conservation	5,583	5,574	5,594	5,587	5,587	5,592	5,610	5,595	5,606
Capacity Resources	5,813	5,924	5,900	5,843	5,218	5,065	5,065	5,065	5,060
Need/(Surplus)	(230)	(350)	(306)	(257)	369	527	545	530	546
Inc Adds by Year End				369	158	19	-15	16	





To: Energy Management Committee
From: Zac Yanez
CC: Cindy Song, Colin Crowley
Date: 02/23/2021
Re: Five Year Extension of Colville Douglas Slice

Background

In June, 2018, PSE entered into an agreement to purchase the output associated with the Confederate Tribes of the Colville Reservation (“Colville Tribe”) five and one half percent (5.5%) share of Douglas County PUD’s Wells hydroelectric Project (“Project”). The Term of the agreement is from 09/01/2018 through 09/30/2021. During the latter part of 2020 Business Initiative team had been in contact with Douglas County PUD staff regarding the expiration of the contract, PSE was informed that the Colville Tribe would likely issue an auction towards the end of the first quarter of 2021 to find a new off taker for their slice product. In February of 2021 PSE was informed that a third party had contacted the Colville Tribe and made an offer ahead of the planned slice auction. The tribal council will make a decision regarding the third party bid at their meeting on March 3rd. Business Initiatives is requesting the EMC to approve PSE submitting an offer to extend our off take agreement for five years at a price of up to \$ [REDACTED] per MWh, \$ [REDACTED] for the term (\$ [REDACTED] per month).

The purpose of this memo is to provide an overview of the contract and show an analysis of how the proposal price was developed.

Product Description

PSE is making an offer to extend the current agreement that is set to expire on 09/30/2021 through 09/30/2026. The 5.5% slice of the Project is approximately 42 MW of capacity and 25.5 aMW of energy, with about 370 MWh of storage.

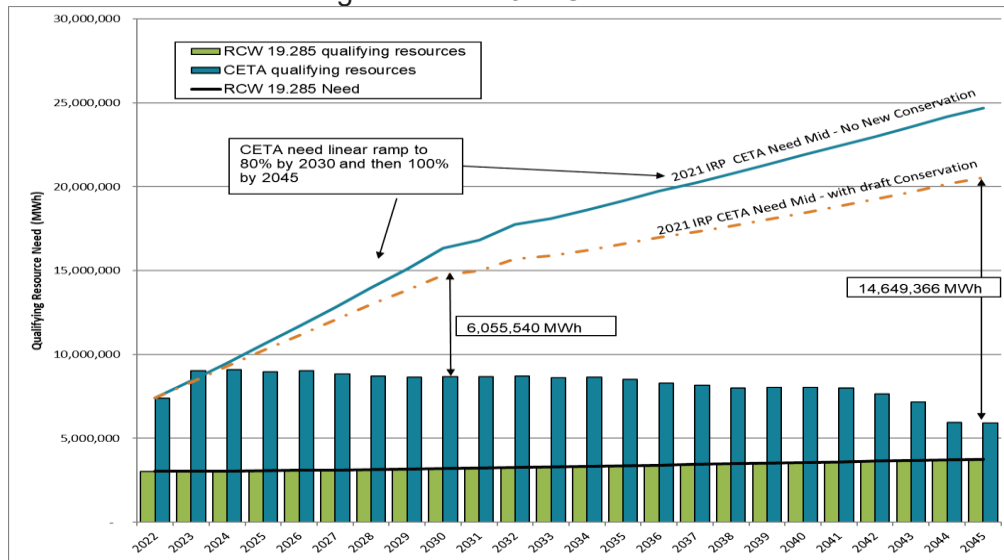
Benefit of the Product

The current draft of the 2021 IRP has identified a CETA energy need of 210 GWh in 2024 growing to 2,130 GWh by 2026 and to 6,056 GWh by 2030. By making an offer on this slice product PSE can keep an existing non-emitting resource in its portfolio for another 5 years and potentially continue to build a relationship that would allow another extension beyond 2026. Figure 4 below shows the CETA need published in the Draft 2021 IRP.

REDACTED VERSION

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Figure 1 Draft 2021 CETA Need



Valuation Analysis

The Business Initiatives team estimates that the slice product has a value to the PSE portfolio of between \$[redacted] million and \$[redacted] million on an annual basis. This estimate is based on average water conditions and the following three value streams for the slice product.

- **Energy Value:**
 - Based on forward mark as of 02/02/2021
- **Flexibility** (consisting of two sub components):
 - **Operational Optimization** – Plexos value derived by calculating optimal dispatch of PSE portfolio with and without Colville Slice
 - **Flex Value** – Used Plexos to calculate the difference in flexibility violations with and without Colville Slice and applied a California base price to the violations.
- **Emissions Value (three scenarios):**
 - No carbon cost – Carbon costs are not included in the dispatch of the portfolio.
 - California carbon pricing – Portfolio dispatch costs reflect \$17.66 per metric ton.
 - Social Costs of Carbon – This scenario assumes the energy from the project is replacing market purchases which have a social cost of carbon of about \$36.10 per MWh.

Table 1 below details the individual components of the valuation for the modeled year.

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Table 1:

Value Stream	\$/MWh	Annual \$ (MM)
Energy Value	\$ 29.28	6.6 MM
Portfolio Optimization	\$ [REDACTED]	[REDACTED] M
Flex Value	\$ [REDACTED]	[REDACTED] M
Value No CO2	\$ [REDACTED]	[REDACTED] M
Value CA CO2	\$ [REDACTED]	[REDACTED] M
Value SCC	\$ [REDACTED]	[REDACTED] MM

Proposed Offer Price

Business Initiatives is proposing an offer of [REDACTED], or \$ [REDACTED] over the five year term. This is the equivalent of \$ [REDACTED] per month or an [REDACTED] dollar and [REDACTED]-cent ([REDACTED]) per MWh premium over market prices. This offer price represents a price point between the \$ [REDACTED] per MWh value of the No CO2 scenario and the \$ [REDACTED] CA CO2 scenario. Additionally, Business Initiatives recent experience with the exercise of the Grant Meaningful Priority support a price point between \$ [REDACTED] and \$ [REDACTED] per MWh.

Conclusion

Due to PSE’s CETA resource needs, the flexibility benefits of slice products, and the ability to reduce market reliance Business Initiatives is requesting to extend the Colville Tribe slice contract through 09/30/2026. To ensure a competitive offer, Business Initiatives is asking the EMC to authorize us to negotiate a final offer of up to \$ [REDACTED] per MWh, which translates to \$ [REDACTED] for the term or \$ [REDACTED] per month, for a five and half percent (5.5%) slice of the Wells Project with a term of five years.

REDACTED VERSION

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2021 Chelan Slice Opportunities

EMC Informational
February 23, 2021



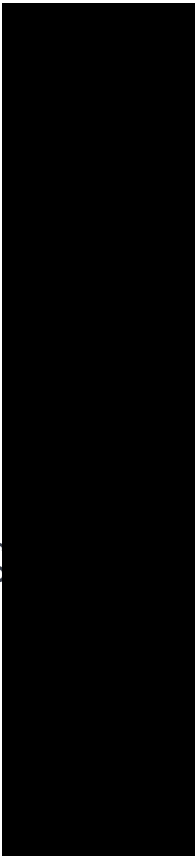
Zacarias Yanez
Commercial Acquisition Manager

Informational: Potential Opportunity to Acquire 190MW+ of Hydro Power from Chelan PUD

Background

In the last few weeks, Chelan PUD has contacted PSE to discuss two distinct opportunities:

1. An upcoming 5% slice auction
 - ~95MW
 - Timing yet to be announced



Intended Recommendation

- Internal analysis to develop an offer price
- Return to EMC with offer terms for Chelan Auction and [REDACTED] or an approval decision

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2 | February 23, 2021 EMC Informational: 2021 Chelan Slice Opportunities

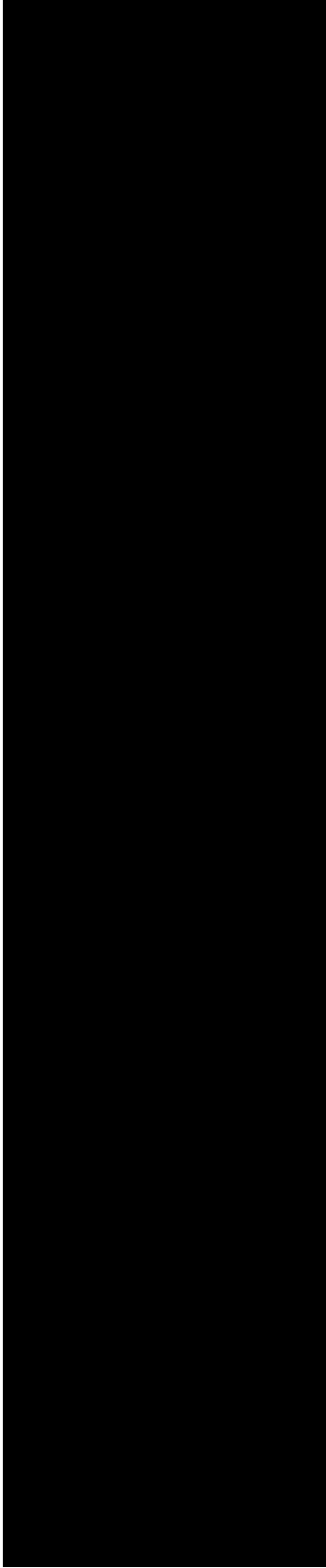
REDACTED VERSION

Background

Auction Product

Chelan PUD will auction up to a 5% slice of the Rocky Reach and Rock Island Hydroelectric Projects

- 5% slice ~ 95 MW and [REDACTED] aMW with 215 MWh of storage
- Expected to be a 5 year term, deliveries would start in 2022
- Preliminary indications are that bids will be due towards the end of March



3 | February 23, 2021 EMC Informational: 2021 Chelan Slice Opportunities



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REDACTED VERSION

Reasons why PSE should consider these opportunities ahead of the upcoming 2021 RFP (to be filed by April 1, 2021)

1. Reduces market reliance
 - Provides energy from a specified source to meet PSE's load obligation for winter months
 - IRP is planning to address market reliance, this work is currently in progress, anticipate there will be more information to share at the next EMC meeting
2. Increases portfolio of CETA compliant resources
 - Each 5% slice is comparable to 130+ MW nameplate wind
3. Provides dispatchable capacity for portfolio flexibility and reserves
 - No incremental integration or transmissions costs, can use existing transmission rights
4. If we don't act now, we might miss the opportunity
 - Mid C hydro owners traditionally sell contractual slices of projects through auctions and bilateral negotiations rather than participating in longer lead time utility RFPs such as PSE's All Source RFP

Informational: Potential Opportunity to Acquire [REDACTED] MW+ of Hydro Power from Chelan PUD

Intended Recommendation

- Internal analysis to develop an offer price
- Return to EMC with offer terms for Chelan Auction and [REDACTED] for an approval decision

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REDACTED VERSION

5-Year Chelan Slice Auction

EMC Decisional
March 25, 2021

Zacarias Yanez
Commercial Acquisition Manager



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REDACTED VERSION

Decisional: Submit a bid to acquire Chelan Slice auction product

- **Recommendation:**
 - Submit a bid for a five percent share of Chelan’s Rocky Reach and Rock Island projects at a annual price of \$ [REDACTED]*, or for the total 5-year term at a price of \$ [REDACTED] starting January 1, 2022 through December 31, 2026.
 - Product has an annual value of between \$ [REDACTED] Million with no Carbon Cost to \$ [REDACTED] Million with California based carbon costs (\$ [REDACTED] Million with the Social Cost of Carbon).

* Note: Price before Canadian Entitlement Agreement, assuming [REDACTED] aMW, is [REDACTED] /MWh. Price net of CEA is \$ [REDACTED] /MWh assuming [REDACTED] aMW.



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REDACTED VERSION

Background

Auction Product

Chelan PUD will auction up to a 5% slice of the Rocky Reach and Rock Island Hydroelectric Projects

- 5% slice ~ 95 MW and [REDACTED] aMW with 215 MWh of storage
- 87 MW of December capacity contribution and [REDACTED] aMW net of Canadian Entitlement
- Five-year term, deliveries would start in 2022
- Bids due 03/30/2021

Chelan Hydro Projects at a Glance:

- 1924 MW Total Capacity
 - Rocky Reach
 - Rock Island 1 and 2
- Owner: Chelan County PUD
- PSE currently has a 25% share through 2031
 - 481 MW Nameplate
 - [REDACTED] aMW Energy



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REDACTED VERSION

CETA Contribution

- ~ [REDACTED] MWh of zero emission resource per year (2022-2026)
- Resource flexibility will support increased variable resource integration as we progress towards CETA targets
- Contributes to interim targets:

- CETA need (2025): 1,096 GWh • CETA need (2026): 1,942 GWh

CETA Need (in GWhs)*	2022	2023	2024	2025	2026	2027	2028	2029	2030
CETA qualifying resources	7,398	9,045	9,087	8,963	9,016	8,824	8,707	8,660	8,691
2021 IRP Draft CETA Energy Target - Mid with Conservation	7,398	8,345	9,297	10,059	10,958	11,717	12,618	13,423	14,061
CETA Need/(Surplus)	0	(699)	210	1,096	1,942	2,892	3,912	4,763	5,369
Need/(Surplus) after Slice	[REDACTED]								

* Updated Draft 2021 IRP

4 | March 25, 2021 EMC Decisional: 2021 Chelan Slice Auction



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REDACTED VERSION

Reasons PSE should consider this opportunities ahead of upcoming 2021 RFP (to be filed by April 1, 2021)

- 1. Reduces market reliance**
 - Provides energy from a specified source to meet PSE's load obligation for winter months
 - IRP is planning to address market reliance, this work is currently in progress
 - Increases portfolio of CETA compliant resources
 - The 5% slice is comparable to 130+ MW nameplate wind
- 2. Provides dispatchable capacity for portfolio flexibility and reserves**
 - No incremental integration or transmissions costs, can use existing transmission rights
- 3. Infrequent auctions are primary vehicle for short to medium term slice sales**
 - Mid-C hydro owners traditionally sell contractual slices of projects through auctions and bilateral negotiations rather than participating in longer lead time utility RFPs such as PSE's All Source RFP
 - Chelan's last auction was in 2019
- 4. PSE strategy is to use the auction bid to set expectations for long-term product**



Bid Price and Comparison

- Business Initiative recommends a \$ [redacted] bid price representing a \$ [redacted] Premium over forward marks starting on 01/01/2022 through 12/31/2026.
 - Five year offer for total costs of \$ [redacted]
 - Average price of \$ [redacted] per year
 - Sensitivity:
 - Changing premium by a \$ [redacted] MWh changes annual costs ± \$ [redacted] K
 - total costs ± \$ [redacted] MM
- Reference Hydro Purchases :
 - Added 4.33% Grant Meaningful Priority share [redacted] or ~70MW capacity and [redacted] aMW, is \$ [redacted] or \$ [redacted] per month
 - Colville-Douglas 5.5% slice 3-year extension, 42.5 MW capacity and [redacted] aMW, bid at ~\$ [redacted] /MWh or ~\$ [redacted] /MWh

6 | March 25, 2021 EMC Decisional: 2021 Chelan Slice Auction

Scenario	\$/MWh
Fwd Marks*	29.90
Premium	[redacted]
Bid Price	[redacted]**
Analysis (Energy + Flex)	[redacted]
Analysis (Energy + Flex + CA Carbon)	[redacted]
Analysis (Energy + Flex + SCC)	[redacted]

* Average five year price on 03/15/21

** Note: Valuation presented net of CEA, assuming [redacted] aMW. Price net of CEA is \$ [redacted] /MWh



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REDACTED VERSION

Chelan Auction Credit Considerations

Collateral Requirements

Scenario	Total Collateral Required	Collateral Threshold	Addition Collateral (LC or Cash)
Forward Prices Unchanged**	\$ [REDACTED]	\$ [REDACTED]	\$ [REDACTED]
13% ↓ in Forward Prices (-2 Monthly Sigma)	\$ [REDACTED]	\$ [REDACTED]	\$ [REDACTED]
33% ↓ in Forward Prices (-2 Annual Sigma)	\$ [REDACTED]	\$ [REDACTED]	\$ [REDACTED]

Credit Costs

- Based on current rate PSE could issue a letter of credit with a cost of about [REDACTED] % or about \$ [REDACTED] per million
- Interest rate subject to change based on market fluctuations
- Burdens current borrowing capacity
- Treasury may be able to manage these costs by posting cash through the issuance of commercial paper, if rates remain favorable

Counterparty Concentration

- Current slice
 - 11% of power from Chelan
 - ~\$ [REDACTED] MM in costs
- Each additional 5 Slice adds
- ~ 2% (to 13%) of power from Chelan
 - ~\$ [REDACTED] MM in additional exposure to Chelan



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7 | March 25, 2021 EMC Decisional: 2021 Chelan Slice Auction

REDACTED VERSION

Recommendation: Submit a bid to acquire Chelan Slice auction product

- **Recommendation:**
 - Submit a bid for a five percent share of Chelan's Rocky Reach and Rock Island projects at a annual price of \$ [REDACTED]*, or for the total 5-year term at a price of \$ [REDACTED] starting January 1, 2022 through December 31, 2026.
 - Product has an annual value of between \$ [REDACTED] Million with no Carbon Cost to \$ [REDACTED] Million with California based carbon costs (\$ [REDACTED] Million with the Social Cost of Carbon).
- **Next Steps:**
 - Submit bid on 3/30/2021
 - Finalize collateral arrangements
 - [REDACTED]

* Note: Price before CEA, assuming [REDACTED] aMW, is \$ [REDACTED]/MWH. Price net of CEA is \$ [REDACTED]/MWh assuming [REDACTED] aMW

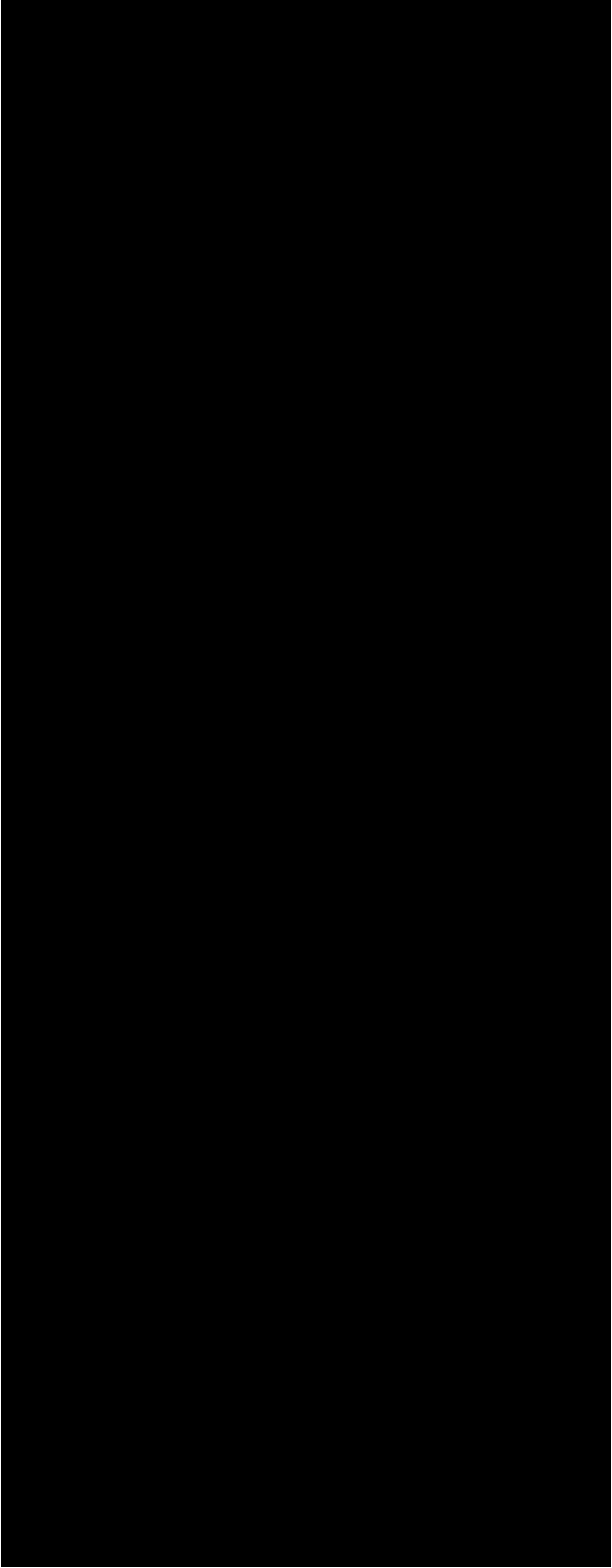


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REDACTED VERSION

Appendix





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10 | March 25, 2021 EMC Decisional: 2021 Chelan Slice Auction

REDACTED VERSION

Chelan One-Year Value (Depending on Carbon Cost Assumptions): \$ [REDACTED] to \$ [REDACTED] Million per year

- PSE Offer is \$ [REDACTED] MM per Year
- One Year Value in 2022
- PSE calculated Market Premium over forward MidC marks (\$/MWh) of \$ [REDACTED] no CO2, \$ [REDACTED] CA CO2, \$ [REDACTED] SCC
 - **Energy Value**
 - Based on Forward marks as of 02/02/2021
 - **Flexibility**
 - **Operation Optimization** – Derived from Plexos value derived by calculating optimal dispatch of PSE portfolio with and without Chelan Slice
 - **Flex Value** – calculated by taking difference in flexibility violations with and without Chelan Slice
 - **Emissions Value**
 - Based on market value of California carbon pricing
 - Social Costs of Carbon
- Does not include additional potential value streams
 - Capacity Credit from reduction in market reliance is additional upside

Value Stream*	\$/MWh	Annual \$ (MM)
Energy Value	\$ 29.28	12.6 MM
Portfolio Optimization	\$ [REDACTED]	[REDACTED] MM
Flex Value	\$ [REDACTED]	[REDACTED] MM
Value no CO2	\$ [REDACTED]	[REDACTED] MM
Value CA CO2	\$ [REDACTED]	[REDACTED] MM
Value SCC	\$ [REDACTED]	[REDACTED] MM

* Note: values are net of CEA assuming [REDACTED] aMW



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REDACTED VERSION

Draft 2021 Capacity Need

- Capacity need 2026: 369 MW
- Capacity need 2027: 527 MW

Table 1. *Cumulative capacity need by year*

	A	B	C	D	E	F
	2022	2023	2024	2025	2026	2027
1	-230	-350	-306	-257	369	527
2		185	372	574	776	979





To: Energy Management Committee
From: Zac Yanez
CC: Cindy Song, Colin Crowley
Date: 03/25/2021
Re: Submit Bid for Five Percent Chelan Slice Auction

Background

In early 2021, Chelan County PUD (“Chelan PUD”) approached PSE about the ability to acquire [REDACTED]. The first opportunity was through an auction for a five percent share of the Rocky Reach Project and the Rock Island Hydro Project (“Slice Auction”) for a term of up to five (5) years. The second opportunity was a [REDACTED]

The Energy Management Committee (“EMC”) instructed Business Initiatives on February 23, 2021 to develop proposals to bid for [REDACTED]. Business Initiatives has developed a strategy to participate in the Slice Auction to acquire a clean and flexible resource at a competitive price and also to set expectations on value before engaging Chelan in bilateral negotiations for their long-term product.

Business Initiatives is requesting the EMC to approve submitting a bid to purchase a five percent slice for a five-year term at a price of \$ [REDACTED] for the term (\$ [REDACTED] per year).

This memo will provide an overview of the Slice Auction and show an analysis of how the bid price was developed.

Product Description

Chelan PUD is offering a five percent (5%) slice of the existing Rocky Reach and Rock Island Hydro projects. These two projects combined account for nearly 1,924 MW of nameplate capacity and about [REDACTED] aMW of generation. PSE is bidding on a five-year term beginning on January 1, 2022 and extending through December 31, 2026. The 5% share of the Slice Auction is approximately 95 MW of nameplate capacity and about [REDACTED] aMW of energy. The resource will include dispatchability within a minimum and maximum range and will include environmental attributes associated with the hydro-generation. While the output is not identified as RCW 19.285 compliant, it will be recognized as carbon free.

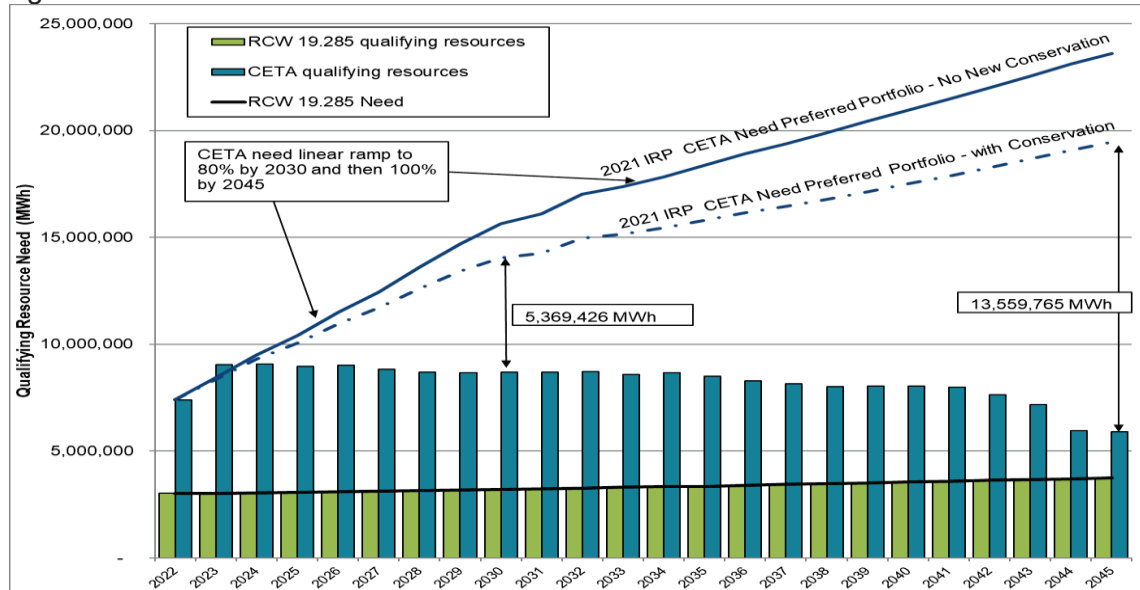
Benefit of the Product

REDACTED VERSION

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The current draft of the 2021 IRP identifies a CETA energy need of 210 GWh in 2024 growing to 1,942 GWh by 2026 and extending to 5,369 GWh by 2030. This bid for the Chelan slice product will aid PSE add significant existing non-emitting resource to its portfolio for five years and potentially continue to build a relationship that would allow another extension beyond 2026. Figure 4 below shows the draft CETA need published in the 2021 IRP.

Figure 1: Draft 2021 CETA Need



Valuation Analysis

Business Initiatives estimates the slice product has a value to the PSE portfolio of between \$ [redacted] million and \$ [redacted] million on an annual basis. This estimate is based on average water conditions and the following three value streams for the slice product.

1. **Energy Value:**
 - Based on forward mark as of 02/02/2021
2. **Flexibility** (consisting of two sub components):
 - *Operational Optimization* – Plexos value derived by calculating optimal dispatch of PSE portfolio with and without Colville Slice
 - *Flex Value* – Used Plexos to calculate the difference in flexibility violations with and without Colville Slice and applied a California base price to the violations.
3. **Emissions Value (three scenarios):**
 - *No carbon cost* – Carbon costs are not included in the dispatch of the portfolio.
 - *California carbon pricing* – Portfolio dispatch costs reflect \$17.66 per metric ton.
 - *Social Costs of Carbon* – This scenario assumes the energy from the project is replacing market purchases which have a social cost of carbon of about \$36.10 per MWh.

Table 1 below details the individual components of the valuation for the modeled year.

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Table 1: Breakout of Valuation Components

Value Stream	\$/MWh	Annual \$ (MM)
Energy Value	\$ 29.28	\$ 12.6 MM
Portfolio Optimization	\$ [REDACTED]	[REDACTED] M
Flex Value	\$ [REDACTED]	[REDACTED] M
Value (No CO ₂)	\$ [REDACTED]	[REDACTED] MM
Value (CA CO ₂)	\$ [REDACTED]	[REDACTED] MM
Value (SCC)	\$ [REDACTED]	[REDACTED] MM

Proposed Offer Price

Business Initiatives proposes a bid of \$ [REDACTED] over the five year term, or \$ [REDACTED] per year.

This is the equivalent of \$ [REDACTED] per MWh price or an [REDACTED] dollar and [REDACTED]-cent (\$ [REDACTED]) per MWh premium over market prices (as of March 15th). This bid price represents a price point between the No CO₂ scenario and the CA CO₂ scenario. Additionally, Business Initiative’s recent experience with the exercise of the Grant Meaningful Priority supports a price point between [REDACTED] and \$ [REDACTED] per MWh.

Conclusion

Due to 1) PSE’s CETA resource needs, 2) the flexibility benefits of slice products, and 3) the ability to reduce market reliance, Business Initiatives requests to submit a bid for the Chelan Slice Auction.

Business Initiatives requests that the EMC to authorize a bid of [REDACTED] **for the term or \$ [REDACTED] per year**, for a five percent (5%) slice of the Rock Island Project and Rocky Reach Project for a term of five years.

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