

**EXH. PKW-4C
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____

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

PAUL K. WETHERBEE

ON BEHALF OF PUGET SOUND ENERGY

**REDACTED
VERSION**

DECEMBER 9, 2020



To: Paul Wetherbee
From: Colin Crowley
CC: Janet Phelps, Cindy Song, Bob Williams, Rahul Venkatesh, Elizabeth Hossner
Date: 7/15/2020
Re: Carbon-free Hydroelectric Supply

Background and Need Determination

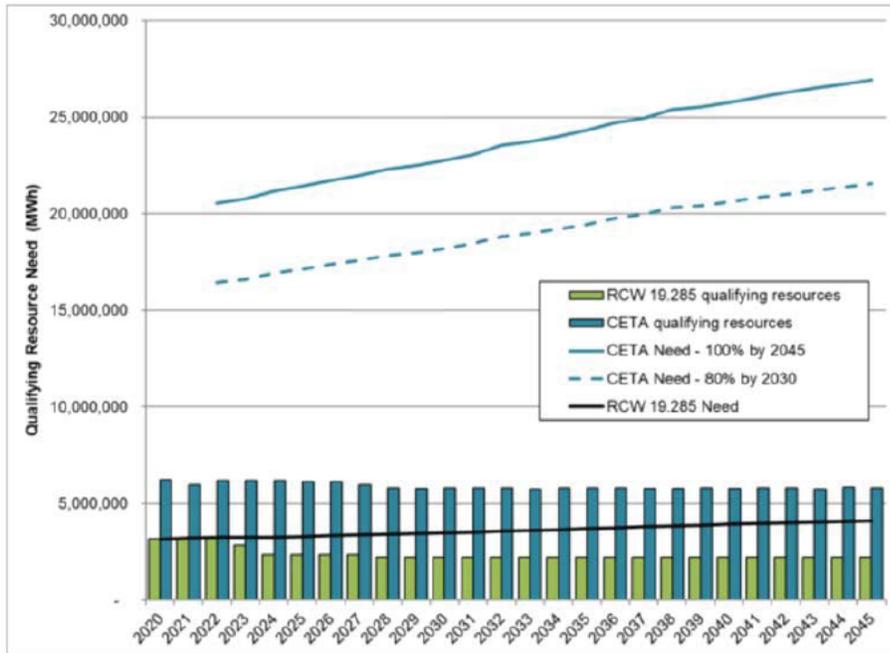
On October 9, 2019 Energy Keepers, Inc. (ENKP) issued a Reverse RFP soliciting bids to purchase up to 40 MW of firm carbon-free energy delivered from Kerr Dam. Energy Keepers listed the following details in their RFP (RFP documents in Appendix B).

Preferences and Requirements for Bids:

- Around-the-Clock energy profile (strongly preferred)
- Longer-dated supply agreement of greater than 10 years (strongly preferred)
- Busbar deal at Kerr (preferred)
- Fixed price (required)

With the passage of the Clean Energy Transformation Act (CETA), PSE's need for renewables, and more generally non-emitting resources, has increased significantly beyond the Renewable Portfolio Standards (RPS) requirement of 15% in 2020. Compliance with CETA will require an estimated 13.4M MWh per year of clean energy by 2030. At 40 aMW the Energy Keepers carbon-free supply represents 350,400 MWh that can be applied towards PSE's interim targets prior to 2030 and PSE's compliance need between 2030 and 2035. In 2021, the first Clean Energy Implementation Plan will outline additional clean resources to meet interim targets leading up to the compliance requirements of carbon neutral by 2030 and carbon free by 2045. Figure 1 illustrates the scale of PSE's clean energy resource need.

Figure 1: PSE Need for Clean Energy Resources



Source: 2019 IRP Progress Report Revision Dated December 10, 2019 Qualifying Energy Need to Meet RCW 19.285 and CETA Requirements

Modeling and Bid Pricing Formulation

The Business Initiatives team conducted analysis using PSE’s Portfolio Screening Model (PSM) to calculate the portfolio benefit of the Energy Keepers proposal assuming a PPA cost of \$ [REDACTED] / [REDACTED]. PSE’s IRP team used the PSM model in the 2019 IRP process to develop possible scenarios to meet capacity needs and RPS targets over a 20-year horizon. The baseline scenario uses a generic resource build plan to meet those needs. The financial impact of adding a resource to the portfolio is compared against the baseline resource plan. If the new resource reduces the present value of cost in the portfolio, it provides a portfolio benefit.

Consistent with CETA guidance, the analysis incorporated the social cost of carbon. Table 1 outlines the portfolio benefit. This illustrates in row 5 that PPA costs are higher than the market revenues using Aurora price forecasts from the 2019 IRP. Once the social cost of carbon is incorporated, a positive portfolio benefit results from the acquisition of the PPA, as shown in row 8.

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Table 1: Portfolio Screening Model Results

	PSM Results - 15 Year PPA 40 MW	
	A	B
	NPV \$ in thousands	Levelized Cost \$/MWH
1 Fixed Transmission Cost		
2 Variable Transmission Cost		
3 Est PPA Cost (using SPI)		
4 Market Revenue		
5 All in PPA Costs		
6 Social cost of carbon		
7 Subtotal w/social cost of carbon		

As a secondary bottom up valuation approach, PSE staff reviewed forward market energy prices, market values for carbon, and modeled capacity values to validate a bid pricing strategy. PSE staff used official Mid C forward price marks from Platts and forward California carbon pricing from the Intercontinental Exchange (ICE).

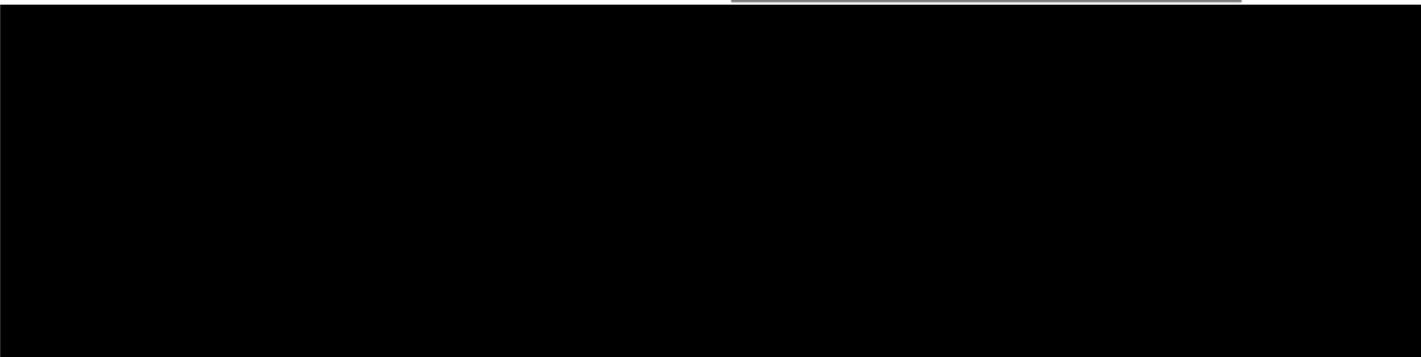
PSE recognizes there is a value to reducing market reliance and that firm transmission coupled with firm supply from an identified generation resource can contribute to PSE’s resource adequacy. This is especially so in cases where firm transmission has a point of receipt in the illiquid Montana region. While a precise method for assigning such a benefit to this scenario is not currently available, one is likely to evolve through regional resource adequacy discussions. Until such a method is available, PSE staff proposed to the Energy Management Committee (EMC) to assign to the Energy Keepers proposal a reduced capacity value as a proxy to reflect a conservative benefit of reduction in market reliance for the secondary bottom up valuation. A separate PSM analysis of Energy Keepers’ proposal indicated a value of \$ [REDACTED] for a 100% peak capacity contribution. PSE used a conservative estimate of the peak capacity contribution, [REDACTED]. This yielded a capacity contribution value of \$ [REDACTED] which was incorporated into the PSE alternative valuation. A higher assumed capacity value would increase the alternative estimate of value. Please note that the primary valuation methodology ascribed no capacity value to the addition of the resource.

This secondary valuation indicated a value of \$ [REDACTED] / [REDACTED] as summarized in Table 2.

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Table 2: Value Based on Forward Prices



Alternatives and Clean Energy Pricing

PSE considered the proposals selected through the 2018 All Source RFP as alternatives for evaluation purposes. The SPI biomass PPA proposal most closely matches the Energy Keepers supply arrangement. Energy Keepers and SPI both provide clean energy for CETA compliance, are of similar duration (15 and 17 years, respectively), provide 40 MW and 17 MW respectively, and both proposals have a fixed price. The levelized cost of energy (LCOE) [REDACTED]. LCOE measures the lifetime costs divided by the energy production. The costs include capital costs, operating expenses, taxes, and return on investment. SPI has a transmission cost advantage of approximately \$3 per MWh because BPA transmission is not required for SPI. SPI is located in PSE's Balancing Authority Area.

In addition, PSE considered multi-year proposals submitted through the 2019 Short-Term RFP as pricing data points for clean Pacific Northwest hydroelectric supply. [REDACTED] both submitted three-year hydroelectric energy supply proposals (included in Appendix A). The associated premiums ranged from [REDACTED] above forward Mid C price marks, as indicated in Table 3. These premiums plus the 15-year forward Mid C price mark of approximately \$35 provided an indicative range of [REDACTED]. Energy Keepers had also provided indicative pricing in response to PSE's Short-Term RFP, and their indicative pricing, which is included in Appendix A, was consistent with this price range.

Table 3: Short-term RFP Multi-year Proposals

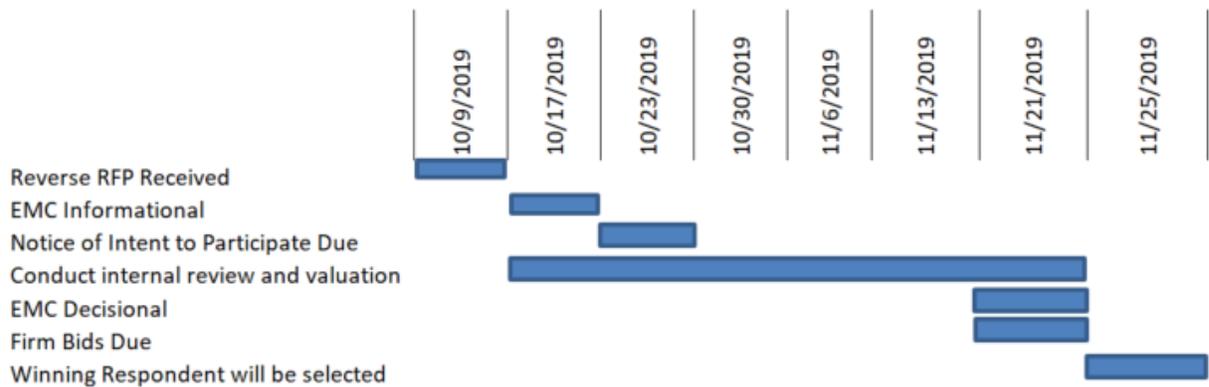


In summary, the bid pricing strategy utilized comparative analysis from the 2018 RFP results and the 2019 short-term RFP results, along with a bottom up approach that assigned value to the [REDACTED]. The PSM model indicated a portfolio benefit for a PPA price up to \$ [REDACTED] and the secondary valuation indicated a value of \$ [REDACTED]. PSE submitted a \$ [REDACTED] price based on a similar 17-year PPA recently signed with Sierra Pacific Industries. This bid price was within the range of the different valuation approaches considered.

RFP Timeline and Activities

PSE received the Reverse RFP, which is included in Appendix B, from Energy Keepers on October 9, 2019. PSE staff informed the EMC at the October meeting that an anticipated recommendation for participation in the RFP would be included as a decisional item for the November agenda. The initial timeline for the RFP activities is presented in Figure 2.

Figure 2: Initial RFP Timeline



Between October and the November EMC meetings, staff performed analysis to formulate a bid strategy for the Energy Keepers RFP. Analysts on the Business Initiatives team conducted analysis using PSM to estimate the portfolio benefit for the Energy Keepers supply deal.

The EMC approved a bid of [REDACTED] for 40 MW of zero carbon energy from the Kerr Dam, delivered in a flat energy schedule from January 2020 through December 2034. PSE’s bid was not accepted. However, PSE received feedback that Energy Keepers would continue to pursue a deal with a short list of counterparties. PSE was included on Energy Keepers short list.

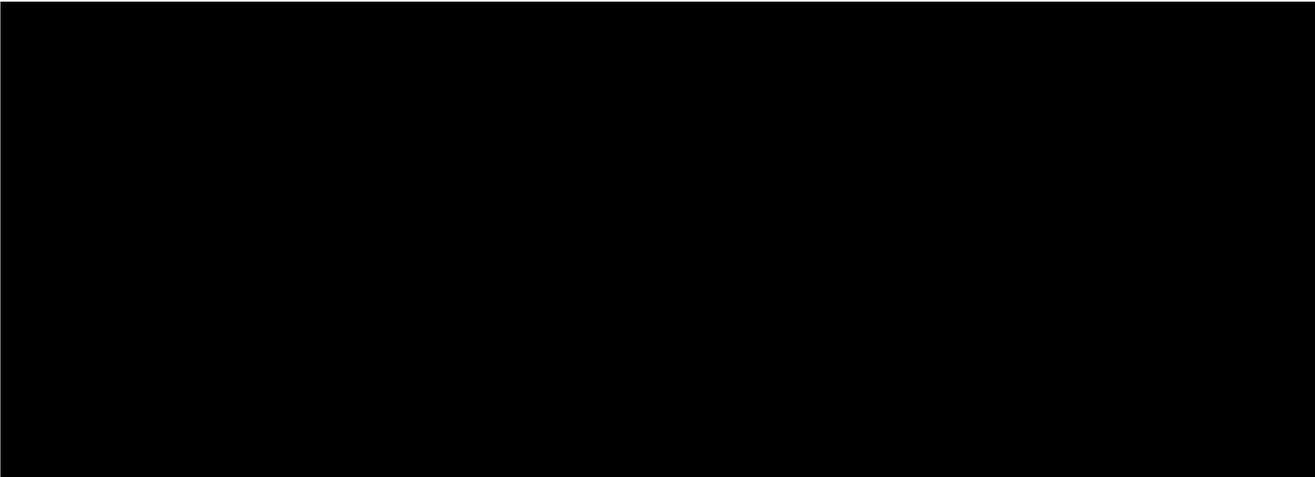
Energy Keepers contemporaneously sent PSE a counter offer, which is presented in Appendix B, for the terms outlined in the RFP and an additional offer for an alternative structure that provided ENKP with the flexibility to deliver from alternative clean energy resources including Asset Controlling Suppliers. The counter-offer is summarized in Table 4.

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Table 4: Energy Keepers Counter-offer



PSE staff analyzed the proposed flexibility that Energy Keepers was seeking and decided the flexibility to redeliver at Mid C had the potential to interfere with future use of BPA transmission for new renewable resources for CETA compliance. In addition, with CETA rulemaking still in progress, clarity for the treatment of Asset Controlling Suppliers such as BPA and Powerex is not yet available. Because of their large hydroelectric portfolios, Powerex and BPA were likely to be a significant portion of Energy Keepers alternative supply of clean resources. Powerex and BPA portfolios may be considered clean resources because their portfolio emissions factors are close to zero.

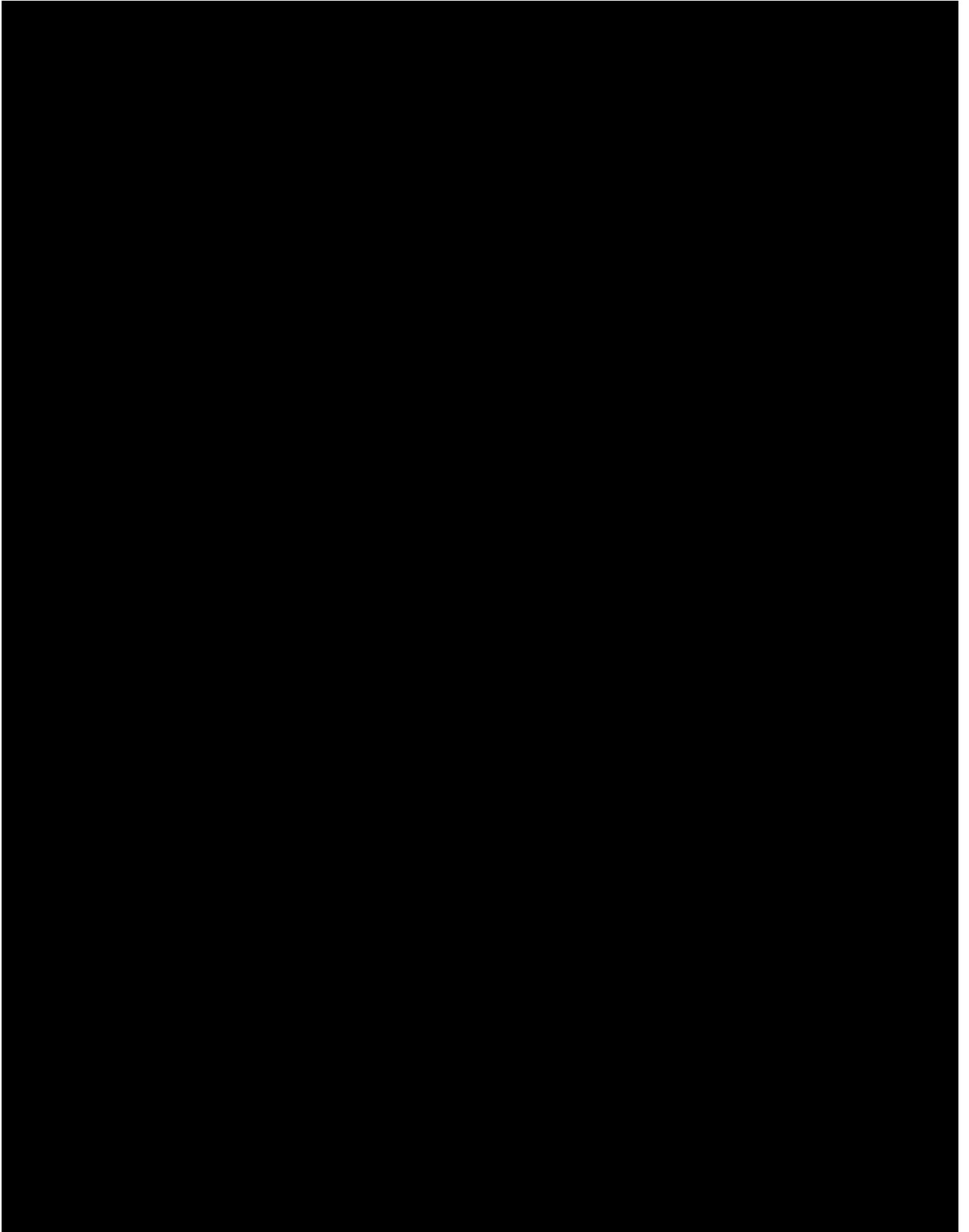
At the January 23rd EMC meeting, PSE staff provided an update on the status of negotiations and reviewed CETA considerations related to Energy Keepers alternative deal structure. Subsequent to the January 23, 2020 EMC update, PSE communicated to Energy Keepers, Inc. that PSE would need to address transmission questions and CETA treatment of Asset Controlling Suppliers to evaluate the alternative clean energy proposal. PSE suggested two paths forward: 1) Simplify the deal structure to the original contemplated transaction, or 2) Wait for more clarity through CETA rulemaking. ENKP elected to pursue a simplified deal structure and agreed to accept PSE's original bid price, delivery point, volume, and an extension of the term by five months.

PSE staff submitted a request for approval to the EMC on January 27, 2020 to execute a power purchase agreement with Energy Keepers, Inc. The terms of the power purchase differed slightly from the RFP bid approved at the November 21 2019 EMC, as indicated below.

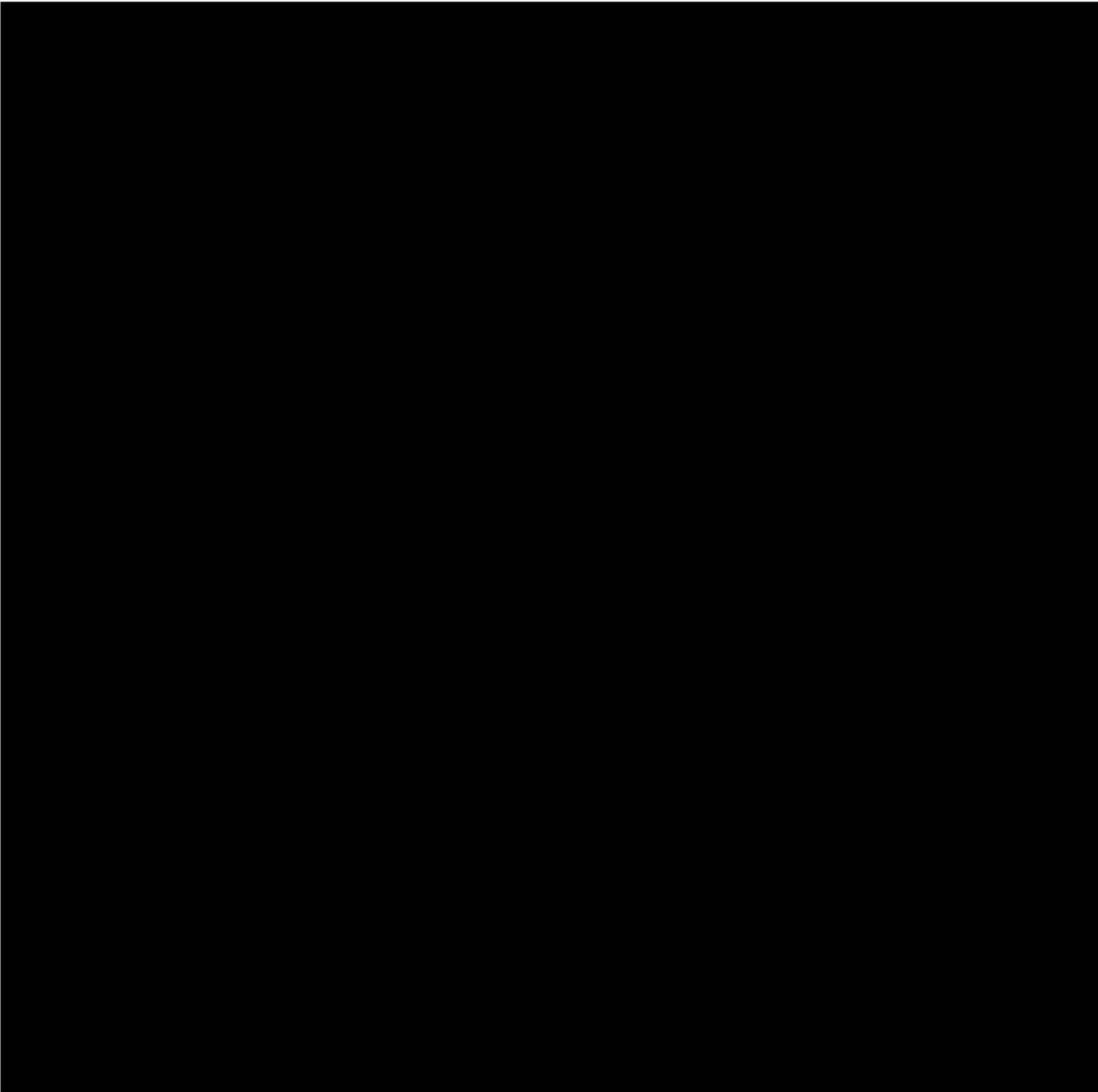
November Bid: January 1, 2020 – December 31, 2034

New Proposal: March 1, 2020 – July 31, 2035 (additional months requested by PSE for CETA coverage)

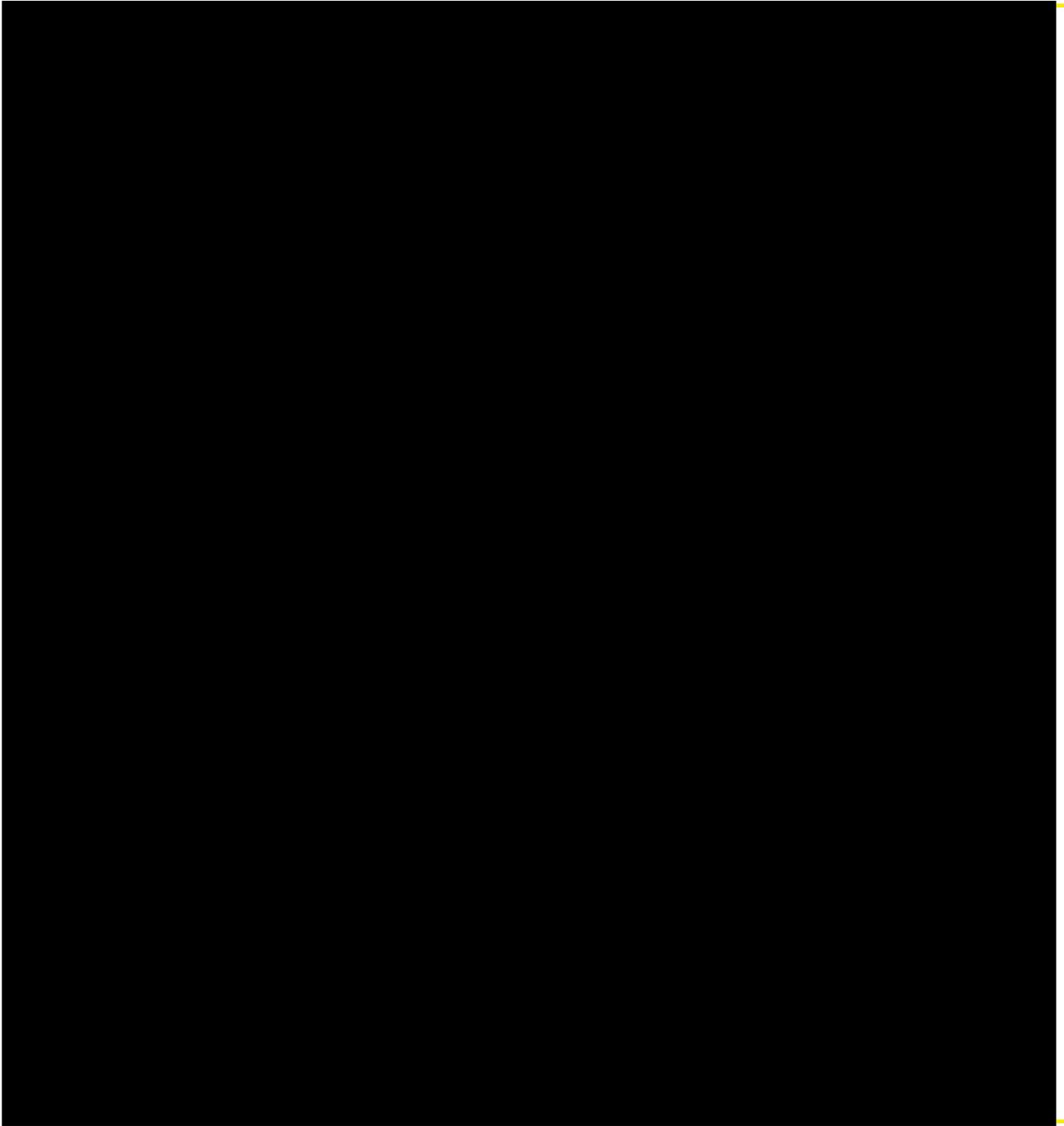
The EMC approved the updated request, and Energy Keepers, Inc. and PSE executed final deal confirmations on January 29, 2020 (see Appendix B).



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Appendix B: Energy Keepers RFP Documentation and EMC Approval

Energy Keepers, Inc. Reverse RFP



Reverse RFP for Firm Carbon-Free Energy – 5 to 40 MW

Energy Keepers, Inc. ("ENKP") is interested in **selling** Carbon-Free energy under the terms and conditions listed below. The Carbon-Free energy would be delivered from Kerr Dam ("KERR"), a 208 MW hydroelectric facility, electrically interconnected to the NorthWestern Energy ("NWMT") transmission system.

KERR is registered with the California Air Resources Board ("CARB") and has a CARB ID of 500014. The emissions factor from KERR is 0.0 MT CO₂e per MWh.

ENKP is an independent power producer, WSPP member and a proudly certified Minority Business Enterprise ("MBE").¹

Please note that ENKP reserves the right to change or terminate this RRFP. ENKP also reserves the right to select or reject any and/or all bids.

- Seller: Energy Keepers, Inc. ("ENKP")
- Product: Firm Carbon-Free Energy ("also referred to as WSPP Schedule C, Specified Source")
- On-Peak
 - Off-Peak, or
 - Around-the-Clock ("ATC") – Strongly preferred by ENKP
- Quantity: 5 MW – 40 MW
- Term(s): 1 – 20 years, with first date of delivery on January 1, 2020 **or later**. Note, ENKP has a strong preference to sell a longer-dated product, so bids of 10 years or longer are desirable.
- POD: ENKP will accepting bids at the following Points of Delivery ("POD") on the NorthWestern Energy ("NWMT") System, to be specified by bidder on accompanying spreadsheet:
- "KERR" busbar (preferred),
 - Other NWMT PODs including: BPAT.NWMT, Brady, Crossover, Yellowtail

Additionally, EKI will entertain bids at PODs on the Bonneville Power Administration, PacifiCorp and Idaho Power transmission systems.

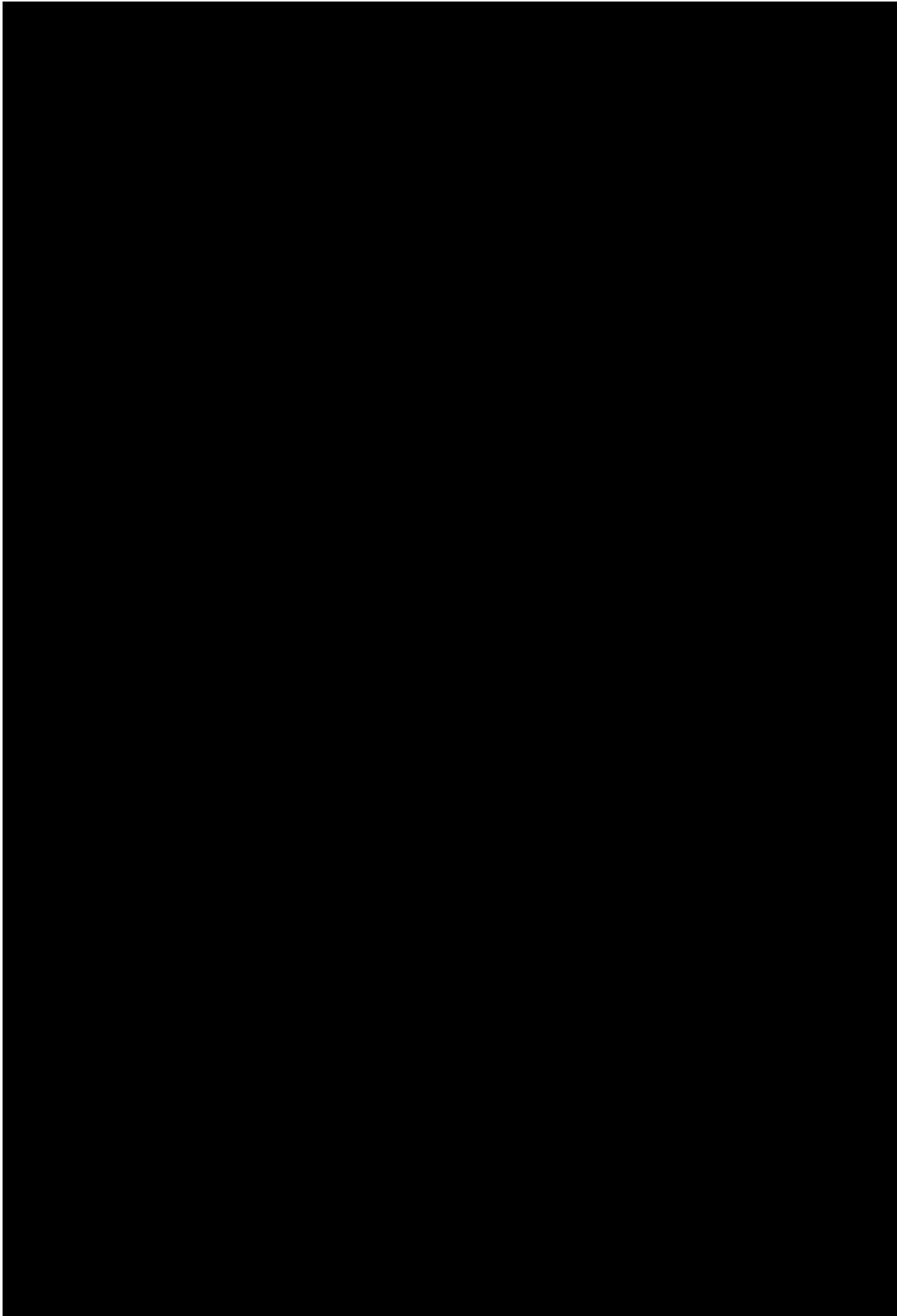
If bidder elects to pick up the energy at the Kerr busbar, ENKP also owns up to 50 MW of firm (redirectable) transmission rights on the NWMT transmission, which may be included as part of the package. While ENKP would prefer to resell this transmission at the tariff rate, bids will be entertained for a reduced rate. Bidders may submit proposals including energy + transmission if desired. However, the firm rights are limited, so depending on the term of the bid, the transmission rights may roll off prior to completion of the energy deliveries. Upon request, ENKP can discuss in detail the durations of transmission reservations.

¹ MBE Certification by the National Minority Supplier Development Council ("NMSDC") and the CA Supplier Clearinghouse.

- Offer Price: Only Fixed Price Bids will be accepted
- Timeline: October 9, 2019 – Reverse RFP Issued
October 23, 2019 – Notification of Intent to Participate (“NOITP”) Due
November 21, 2019 – **Firm bids are due by 11:00 am MST.**
November 25, 2019 – Winning Respondent will be selected and notified by 1:30 pm MST.
- NOITP: Bidders intent on participating in this Reverse RFP shall communicate this to ENKP by close of business on October 23, 2019. This will allow ENKP to appropriately assess outstanding contractual and credit issues pertaining to prospective bidders. Failure to provide NOITP will not disqualify a bidder from the process, but it *may* create delays or timing concerns towards execution of a transaction.
- Contract: At the time of selection, winning respondent must have executed enabling agreement in place with ENKP.

ENKP can utilize the WSPP, EEI, ISDA (with Power Annex) or ENKP’s Master Electric Sales Agreement for this transaction.
- Confirm: While not required, ENKP can utilize the WSPP C-SS as an attachment to the final Confirmation.
- Credit: ENKP’s Middle Office will assess the creditworthiness of the bidder prior to responses. If credit (or lack of credit) is an issue, ENKP will communicate this as soon as possible to allow for both sides to work on possible solutions. Additionally, ENKP *may* also request further collateral support based on the actual bid, particularly if the bid is longer-dated in nature (IE: 5, 10, 20 years). If requested, ENKP can provide the bidder with internal credit limit amounts based on initial credit reviews, allowing for the bidder to plan appropriately for their response.
- Prescheduling: Pre-scheduling will be pursuant to the WECC Daily Scheduling Calendar and the WECC Business Practices.
- Questions: Please direct questions to Daniel Howlett using the following email: daniel.howlett@energykeepersinc.com, or by calling (406) 407-1424.

There is no deadline for questions, which will be accepted up until due date.
- Responses: Responses should be emailed to daniel.howlett@energykeepersinc.com, using the accompanying response spreadsheet.
- Contact Name: _____
- Email: _____
- Phone: _____



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EMC Approval

I have received four approvals from voting EMC members, so this passed and you may proceed.

Janet

