



March 18, 2022

The Honorable Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

**Re: California Independent System Operator Corporation
Amendment No. 1 to Joint Owned Unit Pilot Agreement and
Requests for Waiver of Notice Requirement and Expedited Order**

Docket No. ER22-____-000

Dear Secretary Bose:

The California Independent System Operator Corporation (CAISO) files for Commission acceptance Amendment No. 1 (Amendment) to the Joint Owned Unit Pilot Agreement (Pilot Agreement) among the CAISO, Public Service Company of New Mexico (PNM), and Tucson Electric Power (TEP).¹ The Amendment documents targeted modifications to the technical requirements for the pilot program governed by the Pilot Agreement. These modifications are required to account for some issues identified during implementation and will support TEP's implementation into the Western Energy Imbalance Market (WEIM).

The CAISO requests that the Commission accept the Pilot Agreement, as revised by this Amendment, effective May 3, 2022, and respectfully requests waiver of the Commission's 60-day notice requirement to support the requested effective date. Further, the CAISO respectfully requests that the Commission issue an order accepting this filing by April 29, 2022, to provide regulatory certainty prior to the May 3, 2022 implementation of TEP into the WEIM.

I. Background

The Pilot Agreement sets forth the terms under which the CAISO models a single resource located in the PNM balancing authority area shared by PNM and TEP to facilitate participation by a portion of the shared resource's output in the WEIM on a pilot basis. The Commission found the original version of the Pilot Agreement to be just and reasonable and found it would assist in TEP's

¹ The CAISO submits the Amendment pursuant to Section 205 of the Federal Power Act, 16 U.S.C. § 824d, and Part 35 of the Commission's regulations, 18 C.F.R. Part 35. The Pilot Agreement is designated as CAISO Service Agreement No. 6956.

efforts to commence participation in the WEIM in 2022. The Commission accepted the original version of the Pilot Agreement on December 21, 2021, to be effective the next day as requested by the CAISO.²

As noted in the December 21 Order,³ an essential purpose of the Pilot Agreement is to define the relationship between the technical requirements for the pilot program and the existing WEIM resource participation requirements included in the CAISO's *pro forma* service agreements and tariff. The Pilot Agreement includes requirements that result in differences between how "child resources" (*i.e.*, the individual resource shares) participate in the WEIM and how the "parent resource" (*i.e.*, the resource shared among several parties) would otherwise participate in the WEIM.

Attachment A to the Pilot Agreement (Attachment A) includes the technical requirements for the pilot program, most of which define how the parent resource's physical characteristics are reflected in the child resources for purposes of WEIM participation. Once the parent resource's physical characteristics are registered and reflected in the child resources, those characteristics are accounted for in the CAISO real-time market much the same as any other individual WEIM resource. Attachment A also addresses matters such as resource registration, cost calculation, bidding, schedules, manual dispatch, ramp rates, outage management, metering, and settlement.⁴ In the December 21 Order, the Commission "agree[d] with CAISO that identifying and resolving technical issues through the Pilot [program] could assist CAISO and stakeholders in evaluating this functionality and developing a tariff-based mechanism to address these issues, which, in turn, could benefit other interested market participants that may have similar circumstances."⁵

The Pilot Agreement states that the technical requirements in Attachment A may be modified by mutual agreement of the parties, and that any change to Attachment A that affects the rates, terms, and conditions of service (*i.e.*, any change other than an implementation detail) must be filed with and accepted by the Commission as an amendment to the Pilot Agreement in order for the change to be binding on the parties.⁶

² *Cal. Indep. Sys. Operator Corp.*, 177 FERC ¶ 61,214, at PP 3, 12-13 (2021) (December 21 Order).

³ *Id.* at P 6.

⁴ *Id.* at P 7.

⁵ *Id.* at P 13.

⁶ Pilot Agreement, Sections 3.4 and 9.8.

II. Purpose of the Amendment

The sole purpose of the Amendment is to modify some of the technical requirements in Attachment A. The parties to the Pilot Agreement agreed to these modifications after the December 22, 2021 effective date and prior to the May 3, 2022 WEIM implementation date for TEP, to reflect the implementation changes identified during the development of the pilot program.⁷ Therefore, the Amendment accords with the Commission's finding in the December 21 Order that identifying and resolving technical issues through the pilot program could be beneficial for market participants.⁸ The Amendment will also support TEP's implementation into the WEIM.

Some of the modifications to which the parties agreed represent changes that affect the rates, terms, and conditions of service under the Pilot Agreement, while others constitute implementation details. For example, the parties agreed to modify the technical requirements in Section 5 of Attachment A that describe how parent and child resources will participate in the WEIM, which is a Commission-jurisdictional market, and which the CAISO would consider to affect the rates, terms, and conditions of service. Therefore, the CAISO is submitting the modified technical requirements for Commission acceptance.⁹

None of the proposed changes alter the fundamental nature or purpose of the Agreement, nor do they significantly affect the rates, terms and conditions of service. Rather, these changes represent minor updates necessary to clearly and definitively support implementation of the Agreement as previously accepted by the Commission.¹⁰

III. Effective Date and Requests for Waiver of Notice Requirement and Expedited Order

The CAISO requests that the Commission accept the Agreement, as revised by this Amendment, effective May 3, 2022. May 3 is the date on which TEP is now anticipated to commence participation in the WEIM, and TEP's implementation has been progressing based on the Agreement, including revisions proposed in the Amendment. Therefore, the CAISO respectfully requests that the Commission grant

⁷ First Amendment to the JOU Pilot Agreement executed by the CAISO, PNM, and TEP, at Recitals B and C (provided in Attachment 1 to this filing).

⁸ See December 21 Order at P 13.

⁹ The modified technical requirements also include changes that do not appear to affect the rates, terms, and conditions of service under the Pilot Agreement, but the CAISO is nevertheless including them in the revised version of Attachment A contained in this filing.

¹⁰ See Attachment 4 (providing for informational purposes only a comparison of Attachment A as revised by the Amendment with the currently effective version of Attachment A).

a waiver of its notice requirement to permit this effective date, which is fewer than 61 days after the CAISO is submitting the Amendment.¹¹ Consistent with this timing, the CAISO also respectfully requests that the Commission issue an order by April 29, 2022, accepting this filing effective May 3, 2022 as requested.

Good cause exists for the Commission to grant these requests. Commission issuance of an order accepting the filing by April 29, 2022 will give the CAISO and TEP regulatory certainty and the necessary time to account for implementation of the Amendment on May 3, 2022, the planned implementation date for TEP to join the WEIM. Therefore, granting the CAISO's requests is appropriate.

IV. Service

The CAISO has served copies of this filing upon all parties in the proceeding in which the CAISO filed the original version of the Pilot Agreement (Docket No. ER22-190), the California Public Utilities Commission, and the California Energy Commission. The CAISO has also posted this filing on its website.

V. Communications

Pursuant to Rule 203(b)(3) of the Commission's Rules of Practice and Procedure,¹² the CAISO requests that all correspondence, pleadings, and other communications concerning this filing be served upon the following:

John C. Anders
Assistant General Counsel
California Independent System
Operator Corporation
250 Outcropping Way
Folsom, CA 95630
Tel: (916) 608-7287
Fax: (916) 608-7222
Email: janders@caiso.com

¹¹ Specifically, pursuant to Section 35.11 of the Commission's regulations, 18 C.F.R. § 35.11, the CAISO respectfully requests waiver of the 60-day notice requirement contained in Section 35.3(a)(1) of the regulations, 18 C.F.R. § 35.3(a)(1).

¹² 18 C.F.R. § 385.203(b)(3).

VI. Contents of Filing

In addition to this transmittal letter, this filing includes the following attachments:

- | | |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Attachment 1 | First Amendment to the Pilot Agreement executed by the CAISO, PNM, and TEP; |
| Attachment 2 | Clean version of the Pilot Agreement as revised by the Amendment; |
| Attachment 3 | Red-lined version of the Pilot Agreement as revised by the Amendment; and |
| Attachment 4 | Comparison of Attachment A as revised by the Amendment with the currently effective version of Attachment A—for informational purposes only. |

VII. Conclusion

For the reasons provided above, the CAISO requests that the Commission accept the Pilot Agreement as revised by this Amendment effective May 3, 2022, and issue an order accepting this filing by April 29, 2022. Please contact the undersigned with any questions regarding this filing.

Respectfully submitted,

By: /s/ John C. Anders

Roger E. Collanton

General Counsel

Burton A. Gross

Deputy General Counsel

John C. Anders

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Attorneys for the California Independent
System Operator Corporation

Attachment 1 – First Amendment to the Pilot Agreement Executed by

the CAISO, PNM and TEP

Amendment No. 1 to Joint Owned Unit Pilot Agreement

California Independent Systems Operator Corporation

March 18, 2022



**CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION
AND**

**PUBLIC SERVICE COMPANY OF NEW MEXICO
AND**

TUCSON ELECTRIC POWER COMPANY

**FIRST AMENDMENT
TO THE
JOINT OWNED UNIT PILOT AGREEMENT**

This First Amendment is dated this 17th day of March, 2022, and is entered into, by and between:

(1) **Public Service Company of New Mexico** (“PNM”), a New Mexico corporation having its registered and principal executive office at 414 Silver Avenue, SW, MS 1105, Albuquerque, NM 87102-3289,

(2) **Tucson Electric Power** (“TEP”), an Arizona corporation having its registered and principal executive office at 88 East Broadway Blvd., Tucson, AZ 85701,

and

(3) **California Independent System Operator Corporation** (“CAISO”), a California nonprofit public benefit corporation having a principal executive office located at such place in the State of California as the CAISO Governing Board may from time to time designate.

PNM, TEP and the CAISO are hereinafter referred to as the “Parties.”

Whereas:

- A.** The Parties are signatories to the Joint Owned Unit Pilot Agreement dated October 21, 2021 (the “Agreement”), which was filed with Federal Energy Regulatory Commission (“FERC”) on October 22, 2022. FERC accepted the Agreement effective December 22, 2021 in their letter order dated December 21, 2021.
- B.** The Parties desire to amend the Agreement to update Attachment A prior to the EIM Implementation Date for TEP to reflect the implementation changes identified during the development of the JOU Model and JOU Pilot.

- C. In all other respects, the Parties intend that the Agreement remain in full force and effect in accordance with its terms.

NOW THEREFORE, **THE PARTIES AGREE** as follows:

1. **Effective Date.** This First Amendment shall be effective on the date made effective by FERC.
2. **Termination.** This First Amendment shall remain in full force and effect until the termination of the Agreement.
3. **First Amendment to the Agreement.** The Agreement shall be amended as follows:
 - 3.1 The existing recital (A) is deleted in its entirety and replaced with the following:

“A. PNM joined the Energy Imbalance Market on April 1, 2021 and TEP is expected to join the EIM on May 3, 2022. (“TEP Implementation Date”).”
 - 3.2 Attachment A specifying the "Scope of JOU Model Implementation and JOU Pilot" is deleted in its entirety and the Attachment A attached to this First Amendment is substituted in its place.
4. This First Amendment constitutes the complete and final agreement of the Parties with respect to the purpose of this First Amendment as described in the Recitals hereto and supersedes all prior understandings, whether written or oral, with respect to such subject matter.
5. Except as expressly modified in this First Amendment, the Agreement shall remain in full force and effect in accordance with its terms, and the unmodified provisions of the Agreement shall apply to any new rights and/or obligations established by this First Amendment.
6. This First Amendment may be executed in one or more counterparts at different times, each of which shall be regarded as an original and all of which, taken together, shall constitute one and the same agreement.



IN WITNESS WHEREOF, the Parties have caused this First Amendment to be duly executed by and through their respective authorized representatives as of the date hereinabove written.

California Independent System Operator Corporation

By: DocuSigned by:
Khaled Abdul-Rahman
018C598C28F6464...
Name: Khaled Abdul-Rahman
Title: Vice President
Date: 3/17/2022

Public Service of New Mexico

By: DocuSigned by:
Manuel Sanchez
68CAFEECDFE442A...
Name: Manuel Sanchez
Title: Director Power Operations
Date: 3/17/2022

Tucson Electric Power Company

By: DocuSigned by:
Erik Bakken
78C042D50A6C453...
Name: Erik Bakken
Title: VP, System Operations and Energy Resources
Date: 3/17/2022

ATTACHMENT A

SCOPE OF JOU MODEL IMPLEMENTATION AND JOU PILOT

[Sections 3.1 and 3.2]

I. Introduction

The learnings from the JOU Pilot will inform a future CAISO stakeholder process to consider the availability and application of the JOU Model solution more broadly in the CAISO Markets, which may lead to an amendment of the CAISO Tariff. In the meantime, this Attachment A to the Joint Owned Unit (JOU) Pilot Agreement supplements the CAISO Tariff as incorporated by Section 4.1 of the JOU Pilot Agreement and establishes the technical requirements for the JOU Pilot.

These technical requirements supplement the CAISO Tariff requirements for EIM Resource participation, including registration, modeling, bidding and settlement. Rules, procedures and requirements otherwise applicable to EIM Resource participation and operation of CAISO Market systems, including the associated data and integration requirements, shall continue to be governed by such other CAISO rules, procedures, and requirements, as applicable. Certain parameters described or referenced in this Attachment A are standard parameters in use in various CAISO systems, and may not be explicitly defined in the CAISO Tariff. These technical requirements—

- (a) Define the relationship between the JOU Parent Resource and the JOU Child Resources,
- (b) Establish what the JOU Resource operators Scheduling Coordinators are required to do, or are permitted or not permitted to do, and
- (c) Specify modifications of existing formulations or provide new formulations uniquely applicable to the JOU Pilot.

These technical requirements may be modified in accordance with Section 3.4 of the Agreement as may be necessary to resolve any conflict with CAISO Tariff provisions, ensure feasible outcomes from the JOU Pilot, increase the mutual benefit from the project, or account for unanticipated circumstances. Any changes to this Attachment A other than with respect to implementation details as provided in Section 3.4 of the Agreement, i.e., any change that affects the rates, terms and conditions of service, must be filed with FERC as an amendment in accordance with Section 9.8 of the Agreement.

II. JOU Model Implementation and JOU Pilot

Defined Terms and Acronyms

The following list of defined terms is in addition to any defined terms or acronyms described in the CAISO Tariff. Acronyms used throughout this Attachment A have been listed below although they may already be defined in the CAISO Business Practice

Manual for Definitions and Acronyms as posted on the CAISO website¹. Description of Master File parameters listed in this Attachment A can be found in the CAISO Business Practice Manual for Market Instruments as posted on the CAISO website².

1. JOU Resource: A Generating Unit with more than one entity receiving a share of its Energy and other attributes, where the shares are represented in different Balancing Authority Areas, either by their physical location or by pseudo-tie. It does not include shares represented in different Balancing Authority Areas via a dynamic schedule.
2. JOU Parent Resource: The modeled representation of the physical resource supporting the associated JOU Child Resources, as registered with the CAISO.
3. JOU Parent SC: Scheduling Coordinator entity representing the JOU Parent Resource.
4. JOU Child Resource: The logical models representing the shares of the JOU Parent Resource, as registered with the CAISO.
5. JOU Child SC: Scheduling Coordinator entity representing the JOU Child Resource.
6. Active JOU Child Resource: Active JOU Child Resource is a JOU Child Resource with Base Schedules or Bids in the Energy Imbalance Market for a given market interval.
7. Inactive JOU Child Resource: A JOU Child Resource without a Base Schedule or Bids in the Energy Imbalance Market for a given market interval.
8. Intermediate PMin: It is intermediate value of registered PMin calculated in accordance with Section 3.2 of this Attachment A.
9. LOL: Lower Operating Limit (taking into account PMin rerates)
10. Intermediate LOL: Intermediate Value of Lower Operating Limit
11. UOL: Upper Operating Limit (taking into account PMax derates)
12. LEL: Lower Economic Limit (Lower MW end of the SIBR bid)
13. UEL: Upper Economic Limit (Upper MW end of the SIBR bid)
14. DMLC: Default Minimum Load Cost
15. DSUC: Default Start Up Cost
16. DEB: Default Energy Bid
17. MLC: Minimum Load Cost
18. SUC: Start Up Cost (from bid for active children and summed up for parent)
19. Adjusted MLC: Adjusted Minimum Load Cost
20. Adjusted DMLC: Adjusted Default Minimum Load Cost
21. Adjusted SUC: Adjusted Start Up Cost
22. RIG: Remote Intelligence Gateway
23. GHG: Greenhouse Gas
24. DOT: Dispatch Operating Target
25. BAA: Balancing Authority Area

¹CAISO list of acronyms

<https://bpmcm.caiso.com/Pages/BPMDetails.aspx?BPM=Definitions%20and%20Acronyms>

² CAISO BPM for Market Instruments

<https://bpmcm.caiso.com/Pages/BPMDetails.aspx?BPM=Market%20Instruments>

- 26. SUT: Start Up Time
- 27. MIN_OFF: Minimum Off Time
- 28. LRL: Lower Regulation Limit
- 29. URL: Upper Regulation Limit

JOU Model Implementation and JOU Pilot

1. JOU Resource Registration

- 1.1. A JOU Child Resource registration and logical model type must correspond to the registration and logical model type of the JOU Parent Resource, in accordance with the provisions of this Attachment A.
- 1.2. The JOU Parent SC will register the JOU Parent Resource with the CAISO in accordance with established CAISO Tariff provisions and BPM processes applicable to the registration of EIM Non-Participating Resources. The JOU Parent SC must be the EIM Entity SC of its Native BAA. The Scheduling Coordinator ID code associated with the JOU Parent Resource must not be associated with any other Resource ID, except with a Resource ID representing another JOU Parent Resource.
- 1.3. The JOU Parent SC will register the mapping between JOU Child Resources and the JOU Parent Resource, including the percentage share associated with each JOU Child Resource. Any change in such shares may require an update to the registration of the JOU Child Resource through the applicable registration processes. These shares must be established as static values with the CAISO. The sum of percentage shares of all JOU Child Resources linked to a single JOU Parent Resource must equal 100 %.
- 1.4. The JOU Child Resource(s) of a JOU Parent Resource may be located in different BAAs, when established as a pseudo-tie from the Native BAA to the Attaining BAA.
- 1.5. The JOU Child SC must register the JOU Child Resource with the CAISO in accordance with established Tariff provisions and BPM processes applicable to the registration of EIM Participating Resources or EIM Non-Participating Resources.
 - 1.5.1. A JOU Child Resource registered as an EIM Non-Participating Resource must be represented by the EIM Entity SC of the BAA it is represented in either by physical location or pseudo-tie, as its JOU Child SC

- 1.5.2. A JOU Child Resource is registered as an EIM Participating Resource, may be represented by any certified EIM Participating Resource SC as its JOU Child SC, but cannot be represented by the EIM Entity SC associated with its JOU Parent Resource.
- 1.5.3. Each JOU Child Resource may have a different SC compared to the other JOU Child Resources linked to its JOU Parent Resource.
- 1.6. The CAISO will map the JOU Parent Resource to a Cnode.
- 1.7. If a JOU Child Resource and the JOU Parent Resource are in the same BAA; the JOU Child Resource will be mapped to a different Cnode but linked to the Cnode of its JOU parent resource.
- 1.8. If a JOU Child Resource and the JOU Parent Resource are in different BAAs; the JOU Child Resource will be mapped to a different Cnode in the Attaining BAA but linked to the Cnode of its JOU parent resource
- 1.9. JOU Parent Resources and JOU Child Resources will be modeled as model type Non-MSG Generator. All other model types as listed below will not be available to JOU Parent Resources and JOU Child Resources:
- NGR (including hybrid resources)
 - PDR
 - COG
 - Participating Load
 - PSH
 - Use Limited (UL)
 - MSG
- 1.10. The JOU Parent SC and JOU Child SC may register the following Master File parameters independently for their respective resources. An example of such parameters have been provided below. The CAISO will provide the entire list of applicable Master File parameters to the Parties as part of the JOU Model and JOU Pilot implementation, which will supersede this list below.
- BAA
 - SC
 - RC Entity
 - Resource ID
 - Parent/Child Identification
 - PMin
 - PMax
 - Fuel region
 - Lower Regulation Limit (MW)

- Upper Regulation Limit (MW)
- Ramp_MW_Output
- Ramp_Min_Rate
- Ramp_Max_Rate
- Meter Data Interval
- CAISO Polled Flag
- BSC
- JOU Parent Mapping
- Percentage Share
- DAM Certification Flag
- RTM Certification Flag
- EIM Participation Flag
- HEAT_HEAT_RATE
- HEAT_MW_OUTPUT
- Others (as provided by the CAISO)

1.10.1. The JOU Child SC will be allowed to register the heat rate for its JOU Child Resource in Master File, under the sole condition that the new heat rate it seeks to register has been used to establish the currently effective Negotiated Rate Option DEB.

1.11. With regards to the registration of PMin and Lower Regulation Limit for JOU Child Resources:

1.11.1. If the sum of the individual PMin or LRL of each JOU Child Resource is less than the individual PMin or LRL of the JOU Parent Resource, and the individual PMin or LRL of the JOU Parent Resource is greater than or equal to the product of the total number of JOU Child Resources multiplied times 1 MW; the JOU Child SC may register their PMin or LRL capacities at 1 MW.

1.11.2. If the sum of the individual PMin or LRL of each JOU Child Resource is equal to the individual PMin of the JOU Parent Resource, or the individual PMin or LRL of the JOU Parent Resource is less than the product of the total number of JOU children multiplied times 1 MW; the JOU Child SC may register the PMin or LRL capacities of their resources at their individual values

1.11.3. If the sum of the individual PMin or LRL values of the JOU Child Resources exceed the individual PMin or LRL value of the JOU Parent Resource, the JOU Child SC will not be allowed to register the individual PMin or LRL values of the JOU Child Resources.

1.11.4. The individual PMax and URL value of the JOU Parent Resource must equal the sum of the individual PMax and URL values of the associated JOU Child Resources.

1.12. The Master File registered ramp rate values for each JOU Child Resource will be limited a single segment extending from the PMin to the PMax. The sum of the Master File registered ramp rates of the JOU Child Resources must not exceed the Master File registered maximum ramp rate of the JOU Parent Resource.

1.13. The JOU Parent SC will register the Master File parameters for the JOU Parent Resource as applicable and the corresponding parameters for the JOU Child Resource will be derived as described in the following table. All parameters marked as “x” under the column titled “Child Match Parent” must be submitted solely for the JOU Parent Resource, and will not be considered applicable if they are submitted for the JOU Child Resource. The column titled “Special Child Derivation” identifies any derivation principles or methodologies for Master File parameters submitted at the JOU Parent Resource level. The CAISO will provide the entire list of parameters to the Parties as part of the JOU Model and JOU Pilot implementation, which will supersede the list provided below.

Master File Parameter	Child Match Parent	Special Child Derivation
JOU Flag	x	
Fuel Type	x	
Technology Type	x	
AS flags (spin, non-spin, regulation)	x	
Ramp Up/Down	x	
MDS	x	
MDT	x	
MUT	x	
SU Ramp Time	x	
LMP Eligibility Flag	x	
Heat Emission Rate		Null
Start Down Time (aka Cooling Time)	x	
SUT	x	

Master File Parameter	Child Match Parent	Special Child Derivation
Default GDF	x	
DEB Options Ranking	x	
Default DEB Options Ranking	x	
GHG Emission Rate	x	
GHG Compliance Obligation Flag	x	
VOMC	x	
SUC		Null
SUE		Null
SUF		Null
HAVGC		Null
ROPR (applicable to Min, Max and Market ramp rates)		Null
RREG (applicable to Min, Max and Market ramp rates)		Null
Lower Forbidden Region MW (LFR)		Null
Upper Forbidden Region MW (UFR)		Null
Forbidden Region Crossing Time (FRCT)		Null

1.13.1. The JOU Child SC must ensure that the JOU Child Resource name will be structured in a manner to provide ease of reference to the associated JOU Parent Resource. The CAISO may reject the proposed name from the JOU Child SC if it does not create ease of reference to the JOU Parent Resource name.

2. Telemetry Requirements

2.1. The JOU Parent SC is limited to and required to submit the physical telemetry and Meter Data for the JOU Parent Resource, and the JOU Child SC is limited to and required to submit the logical telemetry and Meter Data for the JOU Child Resource.

2.2. Regarding JOU Parent Resource and JOU Child Resources that are certified for AS, the JOU Parent SC and JOU Child SC must submit direct telemetry for their respective resources using a real-time device or RIG.

3. Calculated Costs for JOU Resources

3.1. The JOU Child Resource will receive the same greenhouse gas maximum compliance cost calculated for the JOU Parent Resource.

3.2. The calculation of the Intermediate PMin of the JOU Child Resource will be as follows:

3.2.1. If the sum of the individual PMin of the JOU Child Resources equal the PMin of the JOU Parent Resource, the Intermediate PMin of the JOU Child Resource will be equal to its PMin.

3.2.2. If the sum of the individual PMin of the JOU Child Resources does not equal the PMin of the JOU Parent Resource:

3.2.2.1. The Intermediate PMin of each JOU Child Resource will be the maximum of the individual PMin and pro-rata PMin of the JOU Child Resource, where the pro-rata PMin is the product of the PMin of the JOU Parent Resource and the percentage share associated with the JOU Child Resource.

3.2.3. The calculation of the Intermediate LOL will follow the same methodology, replacing PMin with LOL in the calculations.

3.3. The manual consult price will be calculated solely for the JOU Parent Resource.

- 3.4. The Negotiated Rate Option is the sole DEB option available to JOU Parent Resources and JOU Child Resources. Each JOU Child SC will be responsible for establishing the Negotiated Rate Option DEB for its JOU Child Resource.
- 3.5. The energy price index calculated for the JOU Parent Resource will be applied to its JOU Child Resources.
- 3.6. The negotiated major maintenance adder of the Minimum Load Cost and Start-Up Cost established for the JOU Parent Resource will be applied to its JOU Child Resources using a pro-rata allocation based on the percentage share associated with each JOU Child Resource. The JOU Parent SC will be responsible for applying for the negotiated major maintenance adder.

4. Outage Management for JOU Resources

- 4.1. The JOU Parent SC will be allowed to submit and view outages solely for the JOU Parent Resource.
- 4.2. The JOU Parent SC may view outages applicable to its JOU Child Resources only if authorized by the applicable JOU Child SC. The JOU Child SC may delegate authority to the JOU Parent SC of its JOU Parent Resource to submit outages on its behalf.
- 4.3. The JOU Child SC will be allowed to submit and view outages solely for the JOU Child Resource it represents. The table below describes the categories of outages that can be submitted for the JOU Parent Resource and the JOU Child Resource. For those outages that can only be submitted for the JOU Parent Resource, the outages will be translated for application to the JOU Child Resource in the manner described below.
 - 4.3.1. A PMin re-rate outage on JOU Parent Resource will be applied to its JOU Child Resources in accordance with calculation methodology for Intermediate LOL described in this Attachment A.
 - 4.3.2. An out of service outage on JOU Parent Resource will set the same out of service outage status for its JOU Child Resources, including any subsequent modifications to this outage status.
 - 4.3.3. A ramp rate de-rate outage on JOU Parent Resource will be applied to its JOU Child Resources as described in this Attachment A.

Outage Category	Allowed to be submitted for JOU Parent Resource	Allowed to be submitted for JOU Child Resource
Out Of Service	X	
Pmin Derate	X	
Pmax Derate	X	X
Ramp rate Derate	X	

- 4.4. The JOU Child SC will not be allowed to view outages on the JOU Parent Resource or other associated JOU Child Resources, unless the JOU Child SC is authorized to view outages applicable to another JOU Child Resource by the responsible JOU Child SC.
- 4.5. This scaling factor methodology is applied when JOU Parent Resource Master File registered ramp rate is subject to de-rates. A scaling factor is calculated by utilizing the following methodology and the values applicable to the JOU Parent Resource: the de-rated highest ramp rate segment divided by the Master File registered highest ramp rate segment. The de-rates of the JOU Parent Resource Master File registered ramp rates will be translated to the JOU Child Resources by multiplying the JOU Child Resource's Master File registered ramp rates with the scaling factor.
- 4.6. The treatment of overlapping outages between the JOU Parent Resource and its JOU Child Resources will be treated in accordance with the outage management provisions of the CAISO Tariff applicable to EIM Resources.
- 4.7. If an out of service outage on the entire JOU Parent Resource is applied to its JOU Child Resources, the JOU Child SC will be allowed to view, but not edit, the translated outage data on its JOU Child Resource.

5. Market Participation for JOU Resources

- 5.1. The JOU Child Resource will be allowed to participate in the Energy Imbalance Market in the same manner as an EIM Participating Resource in accordance with the CAISO Tariff and this Attachment A. The JOU Child Resources of a single JOU Parent Resource will be allowed to have different Energy and Flexible Ramp Up/Down bids. The JOU Child SC will be allowed to only view the Bids it has submitted. The JOU Child SC will be allowed to view aggregated operational information related to the total schedule applicable to its JOU Parent Resource, with this functionality being available at a date later than the TEP Implementation Date.
- 5.2. The JOU Parent SC will not be allowed to submit Bids and Base Schedules, or provision Ancillary Services. The JOU Parent SC will not be allowed to view any

Bids or Base Schedules it has not submitted.

5.2.1. The aggregated Base Schedule information applicable to the JOU Parent Resource may be viewed by its Balancing Authority Area Entity.

5.3. The JOU Child SC and the JOU Parent SC may not submit a revised DEB curve as part of the Variable Cost Option for establishing a DEB, with the Variable Cost option not being available for JOU Resources.

5.4. The Default SUC and Default MLC calculated for the JOU Parent Resource will be applied to the JOU Child Resource in a pro-rata manner using the percentage share associated with each JOU Child Resource. A JOU Child SC will only be allowed to view the calculated Default SUC and Default MLC for its JOU Child Resource, irrespective of whether it is an Active or Inactive JOU Child Resource.

5.5. The Reasonableness Threshold will not be calculated for the JOU Parent Resource or the JOU Child Resource.

5.6. The JOU Child SC may submit revised values of the Default SUC and Default MLC for an Active JOU Child Resource, and will have the sole right to access and view the submittals. The submitted revised Default SUC and Default MLC for Active JOU Child Resources will be validated by the CAISO.

5.7. The JOU Child SC will have the sole right to submit and view the Base Schedules for Energy and Ancillary Services for the JOU Child Resource.

5.8. The submitted Base Schedules on the JOU Child Resources will be deemed valid even if the aggregate of the Base Schedules is lower than the PMin of the JOU Parent Resource. The submittal and the validation of the Base Schedules will result in the JOU Parent Resource being deemed to be in Start-Up subject to existing additional conditions defined below under Section 5.9.

5.9. The JOU Parent Resource will be recognized to be in Start-Up mode when it meets the same conditions applicable to EIM Resources. If the JOU Parent Resource is recognized to not be in Start-Up mode, it will retain its current Commitment Status. If the JOU Parent Resource retains its Commitment Status as "Off", the submitted Base Schedules are ignored."

5.10. The Real-Time Base Schedule balancing test and the flexible ramp test will utilize the submitted Base Schedules of the JOU Child Resources. The flexible ramp test will utilize the Master File registered ramp rate of the JOU Child Resources, subject to adjustments due to de-rates or revisions of the Master File registered ramp rate of the JOU Parent Resource.

- 5.11. While the JOU Parent Resource is in Start-Up, no Bids for the JOU Child Resources will be utilized in RTM, and only zero MW DOTs for the JOU Child Resources will be created.
- 5.12. When a JOU Parent Resource has Inactive JOU Child Resources, the Default SUC of the Inactive JOU Child Resource will be allocated to the Active JOU Child Resources in proportion to their relative percentage shares.

*Adjusted SUC (due to Inactive JOU Child Resource) = Sum of Default SUC of all Inactive JOU Child Resources * (ratio of percentage share of Active JOU Child Resource over the sum of percentage shares of all Active JOU Child Resources.)*

The allocation of Default MLC of the Inactive JOU Child Resources will follow the above-described formula, by replacing SUC with MLC.

- 5.13. When a JOU Parent Resource has a PMin re-rate, the MLC of all Active JOU Child Resources and the Default MLC of Inactive JOU Child Resources, will be adjusted in accordance with the CAISO Tariff, considering any Intermediate PMin or Intermediate LOL created for the JOU Child Resource. Any such adjustment will have priority over any re-allocation of the Default MLC of an Inactive JOU Child Resource to the Default MLC of Active Child Resources of the same JOU Parent Resource.

- 5.13.1. The Adjusted MLC (for Active JOU Child Resources) and Adjusted Default MLC (for all JOU Child Resources) is equal to the sum of the MLC (for Adjusted MLC) or Default MLC (for adjusted Default MLC), and the product of the DEB and the difference between the calculated Intermediate LOL and Intermediate PMin.

*Adjusted MLC or Adjusted DMLC (due to PMin re-rate) = MLC or Default MLC * (DEB * [Intermediate LOL - Intermediate PMin])*

- 5.13.2. When a JOU Parent Resource has a PMin re-rate as well as Inactive JOU Child Resources, the Adjusted MLC is calculated as follows:

The Adjusted MLC derived under Section 5.13.1 of this Attachment A is now adjusted using the formula applied towards adjustment of MLC of Active JOU Child Resources to re-allocate the Default MLC of Inactive JOU Child Resources.

*Adjusted MLC (due to Inactive JOU Child Resource) = Adjusted MLC (due to PMin re-rate) + (Adjusted DMLC of Inactive JOU Child Resource * [ratio of percentage share of Active JOU Child Resource over the sum of percentage shares of all Active JOU Child Resources])*

- 5.14. The Adjusted MLC and Adjusted SUC of the JOU Parent Resource will be the sum of the Adjusted MLCs and Adjusted SUCs of all its Active JOU Child Resources, respectively, when such adjustments are made in accordance with Sections 5.12 and 5.13 of this Attachment A.
- 5.15. The JOU Child Resources will be constrained to the same Commitment Status as the JOU Parent Resource.
- 5.16. There will be no Commitment Costs modeled for a JOU Parent Resource during its Self-Commitment Period, when the JOU Parent Resource is in a Self-Commitment Period due to one or more of its JOU Child Resources being subject to a Self-Commitment Period.
- 5.17. When one JOU Child Resource submits a Self-Schedule or a Base Schedule, all Active JOU Child Resources belonging to the same JOU Parent Resource will be entered into a Self-Commitment Period.
- 5.17.1. The JOU Parent Resource of these JOU Child Resources will also be entered into a Self-Commitment Period.
- 5.18. The JOU Parent Resource will be constrained by certain physical constraints during its Commitment Period as identified below:
- PMax
 - PMin
 - Lower Regulation Limit
 - Lower Forbidden Region
 - Upper Forbidden Region
 - Ramp rate
 - Physical transmission constraints

The constraints enforced on the JOU Parent Resource will not be enforced on the JOU Child Resource Ramp Rates.

- 5.19. JOU Child Resource schedules will be constrained by various limits during its Commitment Period as identified below:
- Power balance constraint of the Native BAA or Attaining BAA
 - Scheduling limits of the Native BAA or Attaining BAA
 - Capacity constraints and scheduling limits of the JOU Child Resource.
 - Lower Economic Limit and Upper Economic Limit of JOU Child Resource
- 5.20. For a JOU Child Resource that is registered as an EIM Participating Resource, the GHG allocation to the various GHG compliance areas will be calculated using

its EIM Bid Adder.

- 5.21. JOU Child Resources will have the LMPM eligibility flag enabled automatically if their JOU Parent Resource has the LMPM eligibility flag enabled, and the Dynamic Competitive Path Assessment process will mitigate the JOU Child Resource to its DEB if applicable.
- 5.22. The calculation of the counter flow capacity will be calculated using the registered attributes of the JOU Child Resources
- 5.23. There may be restrictions imposed on EIM Manual Dispatch Instructions submitted by the Native BAA to dispatch the Start-Up or Shut-Down of a JOU Parent Resource. The Native BAA will have the sole right to submit these Start-Up or Shut-Down instructions and such instructions will be communicated to the JOU Parent SC.
- 5.24. The Attaining BAA of the JOU Child Resource will not be allowed to submit EIM Manual Dispatch Instructions affecting its Start-Up or Shut-Down, but can do so for dispatching it to a certain MW level. These instructions will be communicated to the JOU Child SC.
- 5.25. All EIM Manual Dispatch Instructions on a JOU Parent Resource will be applicable to its JOU Child Resources as well.
- 5.26. When a JOU Parent Resource is subject to EIM Manual Dispatch Instruction for Start-Up and there are no corresponding EIM Manual Dispatch Instructions on the JOU Child Resources, there will be EIM Manual Dispatch Instructions created for its JOU Child Resources to dispatch them to the appropriate MW value to support the JOU Parent Resource Commitment Period. These EIM Manual Dispatch Instructions will dispatch the Active JOU Child Resources to the PMin, if the sum of the individual PMin of the JOU Child Resources equals the PMin of the JOU Parent Resource; otherwise the Active JOU Child Resources will be dispatched to the appropriate MW level to ensure that the sum of their individual dispatched MW levels equals the PMin of the JOU Parent Resource. If the dispatch of the Active Child Resources to their maximum available MW capacity results in an aggregate MW level lower than the PMin of the JOU Parent Resource, there will be EIM Manual Dispatch Instructions created for Inactive JOU Child Resources as well, such that the aggregate MW level of dispatch considering all the JOU Child Resources equals the PMin of the JOU Parent.
- 5.26.1. If the EIM Manual Dispatch Instruction for Start-Up of the JOU Parent Resource is a verbal post-market EIM Manual Dispatch Instruction and there are no corresponding EIM Manual Dispatch Instructions on the

JOU Child Resources, there will be EIM Manual Dispatch Instructions created for the JOU Child Resources to dispatch them to their Intermediate PMin.

- 5.27. When a JOU Parent Resource is subject to EIM Manual Dispatch Instruction for Shut-Down, there will be new EIM Manual Dispatch Instructions created or existing EIM Manual Dispatch Instructions modified for its Active JOU Child Resources to dispatch them to zero (0) MW value to support the JOU Parent Resource Commitment Period.
- 5.27.1. If the EIM Manual Dispatch Instruction that dispatches the JOU Parent Resource to Shut-Down is a verbal post-market EIM Manual Dispatch Instruction, there will be EIM Manual Dispatch Instructions created for the JOU Child Resources to dispatch them to 0 MW. The dispatch to zero MW will only apply to Active JOU Child Resources unless all JOU Child Resources are Inactive JOU Child Resources.
- 5.28. If the EIM Manual Dispatch Instructions for a JOU Parent Resource or a JOU Child Resource conflict with previous EIM Manual Dispatch Instructions, or apply to an Inactive JOU Child Resource, the following actions will be taken:
- 5.28.1. The Native BAA and Attaining BAA will be notified of the conflict, and will individually and jointly be responsible for the resolution of such identified conflicts,
- 5.28.2. The JOU Parent SC and JOU Child SC will be notified of the conflict.
- 5.29. All EIM Manual Dispatch Instructions submitted for the JOU Child Resources will be aggregated and applied to its JOU Parent Resource, if the EIM Manual Dispatch Instructions are of the same type and can be aggregated. Such EIM Manual Dispatch Instructions will be communicated to the Native BAA and the JOU Parent SC.
- 5.30. The Schedules and Dispatch Instructions applicable to the JOU Child Resources will be utilized to construct appropriate Schedules and Dispatch Instructions for the JOU Parent Resource. For the JOU Parent Resource, an Energy Schedule will be derived as the sum of Energy Schedules of all of its JOU Child Resources.
- 5.31. There will be no calculation of Expected Energy, Expected Energy allocation, or commodity allocation, for a JOU Parent Resource.

5.32. If the Base Schedules of the JOU Child Resources associated with the same JOU Parent Resource, in aggregate, is lower than the PMin of the JOU Parent Resource, the Expected Energy of the JOU Child Resource will be calculated in accordance with the following methodology:

5.32.1. If all the Dispatch Operating Targets of the JOU Child Resources are zero, the JOU Parent Resource will be considered to be in Start-Up, and the Expected Energy for all the JOU Child Resources will be calculated in accordance with EIM Base Schedule submission deadline rules.

5.32.2. If any of the Dispatch Operating Targets of the JOU Child Resources are greater than 0.01 MW, the JOU Parent Resource is considered to be in Commitment Status type "On", and Expected Energy for all the JOU Child Resources will be calculated in accordance with the CAISO Tariff.

5.33. If the Base Schedules of the JOU Child Resources associated with the same JOU Parent Resource, in aggregate, is equal to or higher than the PMin of the JOU Parent Resource, the Expected Energy of the JOU Child Resource will be calculated in accordance with the CAISO Tariff provisions applicable to EIM Resources.

5.34. The JOU Parent SC will only receive access to the data published for its JOU Parent Resource, while the JOU Child SC will only receive access to the data published pertaining to its JOU Child Resource.

5.35. The JOU Parent SC will only receive access to ADS Instructions associated with its JOU Parent Resource, while the JOU Child SC will only receive access to ADS instructions associated with its JOU Child Resource.

5.36. The Start-Up Time submitted as part of the Start-Up Bid for a JOU Child Resource will be rejected, if it does not precisely match the Start-Up Time registered in Master File for the corresponding JOU Child Resource.

6. Metering

6.1. The JOU Parent SC will ensure that revenue grade meters are utilized for the purposes of submitting physical Meter Data to CAISO for the JOU Parent Resource. The CAISO will not use any Meter Data submitted by the JOU Parent SC for the JOU Parent Resource, for settling any Charge Codes.

6.2. For a JOU Child Resource, its JOU Child SC will submit Meter Data in accordance with the particular JOU Child Resource's SQMD Plan. For the

purposes of the SQMD Plan, the JOU Child SC will ensure metering devices are established at the respective Inter-Ties where the Energy from the JOU Child Resource is measured.

- 6.3. The JOU Parent SC of the JOU Parent Resource and JOU Child SCs of its JOU Child Resources will ensure that their submitted Meter data have an equal level of granularity.
- 6.4. All T + 52B Meter Data submitted for a JOU Parent Resource will be compared against its JOU Child Resources, and the Meter Data for both types of resources will fail validation if their difference is outside of the specified tolerance. This specified tolerance is established to account for numerical rounding errors caused by the utilization of JOU Parent Resource Meter Data for purposes of logically calculating JOU Child Resource Meter Data. The Meter Data for the JOU Child Resources that failed validation will still be used for Settlements without any modification by CAISO. A daily report, detailing the Meter Data intervals that failed validation and associated supporting information, will be generated and provided to the applicable JOU Parent SC's and JOU Child SC's. The JOU Parent SC and JOU Child SCs are responsible for correcting and re-submitting the Meter Data intervals that failed validation, and failure to do so will be addressed in accordance with CAISO Tariff provisions applicable to Meter Data submissions.

7. Settlements

- 7.1. All JOU Child Resources will be subject to Settlement in accordance with the CAISO Tariff provisions applicable to EIM Participating Resources and EIM non-participating resources. The JOU Parent Resource will not be subject to any Settlement, nor will there be any administrative fees or charges applicable to the JOU Parent Resource with respect to the implementation and operation of the unique Scheduling Coordinator ID code associated with the JOU Parent Resource.
- 7.2. As part of the Bid Cost Recovery process, commitment cost qualification calculations will be performed for the JOU Parent Resource by comparing the submitted Meter Data and effective PMin (and any LOL) of the JOU Parent Resource. All JOU Child Resources of the JOU Parent Resource will receive the outcome of this commitment cost qualification process.
- 7.3. For calculating the Persistent Deviation Metric and Real-Time Performance Metric, there will be a ramp rate calculated for the JOU Child Resources in the following manner: the delta of the DOTs from consecutive Settlement Intervals divided the time difference between those Settlement Intervals.

Attachment 2 – Clean version of the Pilot Agreement revised by the Amendment

Amendment No. 1 to Joint Owned Unit Pilot Agreement

California Independent Systems Operator Corporation

March 18, 2022

**CALIFORNIA INDEPENDENT SYSTEM
OPERATOR CORPORATION**

**PUBLIC SERVICE COMPANY OF
NEW MEXICO**

AND

TUCSON ELECTRIC POWER

**JOINT OWNED UNIT
PILOT AGREEMENT**

JOINT OWNED UNIT PILOT AGREEMENT

THIS JOINT OWNED UNIT PILOT AGREEMENT (“AGREEMENT”) is established this [redacted] day of [redacted], 2021, and is accepted by and among:

- (1) **Public Service Company of New Mexico (“PNM”)**, a New Mexico corporation having its registered and principal executive office at 414 Silver Avenue, SW, MS 1105, Albuquerque, NM 87102-3289,
- (2) **Tucson Electric Power (“TEP”)**, an Arizona corporation having its registered and principal executive office at 88 East Broadway Blvd., Tucson, AZ 85701,

and

- (3) **California Independent System Operator Corporation (“CAISO”)**, a California nonprofit public benefit corporation having a principal executive office located at such place in the State of California as the CAISO Governing Board may from time to time designate.

PNM, TEP and the CAISO are hereinafter referred to as the “Parties.”

Whereas:

- A. PNM joined the Energy Imbalance Market on April 1, 2021 and TEP is expected to join the EIM on May 3, 2022 (“TEP Implementation Date”).
- B. PNM hosts the Luna Energy Facility within its Balancing Authority Area and dynamically transfers some portions of the associated Generating Units to the TEP Balancing Authority Area.
- C. The CAISO supports dynamic transfers in the EIM, including the opportunity for shared Pseudo-Ties from a Generating Unit in an EIM Entity Balancing Authority Area to be dynamically transferred into the CAISO Balancing Authority Area, and is interested in piloting its recently developed joint owned unit modeling functionality (“JOU Model”) prior to considering CAISO Tariff changes to extend the functionality to all eligible CAISO Market Participants.
- D. PNM and TEP would benefit from having this functionality available when TEP joins the EIM so that shares of Pseudo-Tied resources dynamically transferred from the PNM Balancing Authority Area to the TEP Balancing Authority Area are more accurately modeled in the EIM, and both are willing to participate in a JOU Model pilot together with the CAISO (“JOU Pilot”).

- E. Only the PNM shares and the shares of Pseudo-Tied resources dynamically transferred from the PNM Balancing Authority Area to the TEP Balancing Authority Area will be specifically included in the JOU Pilot.
- F. The Parties are entering into this Agreement to provide for the scope of work to implement the JOU Model and to support the ongoing JOU Pilot.

NOW THEREFORE, in consideration of the mutual covenants set forth herein, **THE PARTIES AGREE** as follows:

ARTICLE I DEFINITIONS AND INTERPRETATION

- 1.1 Master Definitions Supplement.** All capitalized terms and expressions used and not otherwise defined in this Agreement shall have the same meaning as those contained in the Master Definitions Supplement to the CAISO Tariff.
- 1.2 Rules of Interpretation.** The following rules of interpretation and conventions shall apply to this Agreement:
 - (a) if and to the extent a matter is specifically addressed by a provision of this Agreement, the provision of this Agreement shall govern notwithstanding any inconsistent provisions of the CAISO Tariff;
 - (b) if and to the extent this Agreement provides that a matter shall be determined in accordance with the applicable provisions of the CAISO Tariff, the applicable provisions of the CAISO Tariff shall govern;
 - (c) the singular shall include the plural and vice versa;
 - (d) the masculine shall include the feminine and neutral and vice versa;
 - (e) “includes” or “including” shall mean “including without limitation”;
 - (f) references to a Section, Article or Schedule shall mean a Section, Article or a Schedule of this Agreement, as the case may be, unless the context otherwise requires;
 - (g) a reference to a given agreement or instrument shall be a reference to that agreement or instrument as modified, amended, supplemented or restated through the date as of which such reference is made;
 - (h) unless the context otherwise requires, references to any law shall be deemed references to such law as it may be amended, replaced or restated from time to time;

- (i) unless the context otherwise requires, any reference to a “person” includes any individual, partnership, firm, company, corporation, joint venture, trust, association, organization or other entity, in each case whether or not having separate legal personality;
- (j) unless the context otherwise requires, any reference to a Party includes a reference to its permitted successors and assigns;
- (k) any reference to a day, week, month or year is to a calendar day, week, month or year;
- (l) unless the context requires otherwise, “or” is used in the conjunctive sense; and
- (m) the captions and headings in this Agreement are inserted solely to facilitate reference and shall have no bearing upon the interpretation of any of the terms and conditions of this Agreement.

ARTICLE II TERM AND TERMINATION

- 2.1 Effective Date.** This Agreement shall become effective upon the TEP Implementation Date or such other date as the Agreement may be accepted, approved or otherwise permitted to take effect by FERC, without condition or modification unsatisfactory to any Party (“Effective Date”), and shall remain in full force and effect until terminated pursuant to Section 2.2 of this Agreement. The Parties understand and acknowledge that the *pro forma* CAISO Energy Imbalance Market service agreements must be effective and include the resource information necessary to support the JOU Pilot.
- 2.1.1 Modification by FERC.** In the event FERC requires any modification to the Agreement or imposes any other condition upon its acceptance or approval of the Agreement, each Party shall have ten (10) days to notify the other Parties that any such modification or condition is unacceptable to that Party. If no Party provides such notice, then the Agreement, as modified or conditioned by FERC, shall take effect as of the date determined under section 2.1. If any Party provides such notice to the other Parties, the Parties shall take any one or more of the following actions: (i) meet and confer and agree to accept any modifications or conditions imposed by such FERC order; (ii) jointly seek further administrative or legal remedies with respect to such FERC order, including a request for rehearing or clarification; or (iii) enter into negotiations with respect to accommodation of such FERC order, provided however, if the Parties have not agreed to such an accommodation within thirty (30) days after the date on which such FERC order becomes a final and non-appealable

order, such order shall be deemed an adverse order and the Parties shall have no further rights and obligations under this Agreement.

2.2 Termination. The Parties may mutually agree to terminate this Agreement in writing at any time with six (6) months' notice, and this Agreement will automatically terminate three years after the Effective Date unless amended by the Parties. In addition, the CAISO may terminate this Agreement in accordance with Section 2.2.1 and PNM or TEP may terminate this Agreement in accordance with Section 2.2.2. The Parties acknowledge that in any case the CAISO is required to file a timely notice of termination with FERC, and that this Agreement will terminate upon acceptance by FERC of such a notice of termination in accordance with FERC requirements. In the event this Agreement is terminated, this Agreement will become wholly void and of no further force and effect, and the liabilities and obligations of the Parties hereunder will terminate, and each Party shall be fully released and discharged from any liability or obligation under this Agreement unless survival is otherwise provided.

2.2.1 Termination by CAISO. The CAISO may terminate this Agreement by giving written notice of termination pursuant to the CAISO Tariff six (6) months prior to the termination in the event that: (1) PNM or TEP materially default under this Agreement provided that, if capable of being remedied, the default is not remedied within thirty (30) days after the CAISO has given written notice of the default; (2) the Parties are unable to reach agreement on a change to Attachment A as provided in Section 3.4 or 5.2; or (3) the CAISO reasonably determines prior to the start of JOU Pilot that the JOU Model will adversely impact the EIM.

2.2.2 Termination by PNM or TEP. In the event that PNM or TEP no longer wishes to pursue the JOU Pilot with the CAISO, it must first notify the CAISO in writing of its intent to terminate ("Notice of Intent to Terminate") and engage in thirty (30) days of good faith negotiations in an effort to resolve its concerns. If the Parties successfully resolve the concerns, PNM or TEP as applicable must notify the CAISO in writing of the withdrawal of such notice ("Notice of Resolution"). Otherwise, PNM or TEP as applicable may terminate this Agreement in its sole discretion and for any reason by providing written notice to the CAISO that it is terminating this Agreement six (6) months in advance of the termination ("Termination Notice"). A Termination Notice from either PNM or TEP will terminate this Agreement.

2.3 No Termination Charge. The CAISO shall not levy an exit fee or other charge associated with CAISO systems, procedures, or other changes that may be required by the termination of this Agreement by either Party.

ARTICLE III

SCOPE OF WORK AND SERVICES

- 3.1 Scope of Implementation Work.** The Parties will complete the work necessary to implement the JOU Model as described in Attachment A.
- 3.2 Scope of Services.** The Parties will perform the tasks necessary to engage in the JOU Pilot as described in Attachment A.
- 3.3 Charges.** The Parties will each be separately responsible for any and all costs associated with implementation of the JOU Model or participation in the JOU Pilot, provided the CAISO will settle all applicable EIM related charges during the JOU Pilot in accordance with the CAISO Tariff.
- 3.4 Changes to Attachment A.** Either Party may propose a change in Attachment A to the other Party. If a Party proposes a change in Attachment A, the Parties shall negotiate in good faith to attempt to reach agreement on the proposal, any necessary changes in Attachment A and any other affected provision of this Agreement. The agreement of the Parties to a change in Attachment A must be memorialized in a revision to Attachment A and authorized by the Parties' designated executives in Attachment B, which will then be binding on the Parties without the need for execution of an amendment to this Agreement provided the changes constitute implementation details. For purposes of this Agreement, "designated executive" shall mean the individual identified in Attachment B, or their designee or successor. Changes to any provision of this Agreement other than implementation details in Attachment A must be reflected in an executed amendment to this Agreement, and be accepted by FERC to be binding on the Parties. Any change to Attachment A that affects the rates, terms and conditions of service, must be filed with FERC as an amendment
- 3.5 Review Meetings**

The Parties will confer and agree on the framework for conducting periodic meetings to review and discuss the progress of the JOU Pilot. Issues and concerns identified at these meetings by any Party may be resolved in accordance with Sections 3.4, 5.1, and 5.2, as applicable.

ARTICLE IV GENERAL PROVISIONS

- 4.1 Agreement Subject to CAISO Tariff.** Except as provided in Section 1.2(a), this Agreement shall be subject to the CAISO Tariff, which shall be deemed to be incorporated herein.

- 4.2 No Other Relationships.** Nothing contained in this Agreement shall be construed as creating a corporation, company, partnership, association, joint venture or other entity, nor shall anything contained in this Agreement be construed as creating or requiring any fiduciary relationship between the Parties. No Party shall be responsible hereunder for the acts or omissions of the other Parties. This Agreement is for the sole and exclusive benefit of the Parties and shall not create a contractual relationship with, or cause of action in favor of, any third party.

ARTICLE V DISPUTE RESOLUTION

- 5.1 Dispute Resolution.** The Parties shall make reasonable efforts to settle all disputes arising out of or in connection with this Agreement. In the event any dispute is not settled, the Parties shall adhere to the CAISO ADR Procedures set forth in Section 13 of the CAISO Tariff, which is incorporated by reference, except that any reference in Section 13 of the CAISO Tariff to Market Participants shall be read as a reference to PNM or TEP and references to the CAISO Tariff shall be read as references to this Agreement.
- 5.2 Attachment A Conflict.** In the event any CAISO Tariff requirement or other rule or procedure conflicts with Attachment A as incorporated by Section 4.1, the more specific detail in Attachment A shall govern provided that the CAISO Tariff requirement or other rule or procedure shall apply to the extent it is not in conflict with the requirement in Attachment A. The CAISO will evaluate any identified conflict between Attachment A and a CAISO Tariff requirement or other rule or procedure and advise PNM and TEP of its determination concerning the conflict. If PNM or TEP object to the CAISO determination, the CAISO determination will nonetheless apply until the Parties accept the circumstances consistent with the CAISO determination, modify Attachment A in accordance with Section 9.8 to resolve the conflict, or pursue other action under the Agreement.

ARTICLE VI REPRESENTATIONS AND WARRANTIES

- 6.1 Representation and Warranties.** Each Party represents and warrants that the execution, delivery and performance of this Agreement by it has been duly authorized by all necessary corporate or governmental actions, to the extent authorized by law.
- 6.2 Necessary Approvals.** PNM and TEP each represent that all necessary rights, leases, approvals, permits, licenses, easements, access to operate in compliance with this Agreement have been or will be obtained prior to the effective date of this Agreement, including any arrangement with third parties.

ARTICLE VII LIABILITY

- 7.1 Liability.** The provisions of Section 14 of the CAISO Tariff will apply to liability arising under this Agreement, except that all references in Section 14 of the CAISO Tariff to Market Participants shall be read as references to PNM or TEP and references to the CAISO Tariff shall be read as references to this Agreement.

ARTICLE XIII UNCONTROLLABLE FORCES

- 8.1 Uncontrollable Forces Tariff Provisions.** Section 14.1 of the CAISO Tariff shall be incorporated by reference into this Agreement except that all references in Section 14.1 of the CAISO Tariff to Market Participants shall be read as a reference to PNM or TEP and references to the CAISO Tariff shall be read as references to this Agreement.

ARTICLE IX MISCELLANEOUS

- 9.1 Assignments.** PNM or TEP may assign or transfer any or all of its rights or obligations under this Agreement with the CAISO's prior written consent in accordance with Section 22.2 of the CAISO Tariff, and neither PNM nor TEP may assign or transfer any or all of its rights or obligations under this Agreement without such consent. Such consent shall not be unreasonably withheld. Any such transfer or assignment shall be conditioned upon the successor in interest accepting the rights or obligations under this Agreement as if said successor in interest were an original Party to this Agreement and the successor in interest negotiating an amendment or revision to this Agreement as may be required to facilitate the transfer or assignment. Any such assignment shall also take into consideration the timeline for providing adequate access and training to the CAISO systems to the assignee for continued implementation and operation of the JOU Model and JOU Pilot.
- 9.2 Notices.** Any notice, demand or request which may be given to or made upon any Party regarding this Agreement shall be made in accordance with Section 22.4 of the CAISO Tariff, provided that all references in Section 22.4 of the CAISO Tariff to Market Participants shall be read as a reference to PNM or TEP and references to the CAISO Tariff shall be read as references to this Agreement, and unless otherwise stated or agreed shall be made to the contact for notices representative of the other Parties indicated in Attachment

B. A Party must update the information in Attachment B of this Agreement as information changes. Such changes shall not constitute an amendment to this Agreement.

- 9.3 Waivers.** Any waiver at any time by either Party of its rights with respect to any default under this Agreement, or with respect to any other matter arising in connection with this Agreement, shall not constitute or be deemed a waiver with respect to any subsequent default or other matter arising in connection with this Agreement. Any delay, short of the statutory period of limitations, in asserting or enforcing any right under this Agreement shall not constitute or be deemed a waiver of such right.
- 9.4 Governing Law and Forum.** This Agreement shall be deemed to be a contract made under, and for all purposes shall be governed by and construed in accordance with, the laws of the State of California, except its conflict of law provisions. The Parties irrevocably consent that any legal action or proceeding arising under or relating to this Agreement to which the CAISO ADR Procedures do not apply shall be brought in any of the following forums, as appropriate: any court of the State of California, any federal court of the United States of America located in the State of California, or, where subject to its jurisdiction, before the Federal Energy Regulatory Commission. To the fullest extent permitted by law, each of the Parties hereto waives any right it may have to a trial by jury in respect of litigation directly or indirectly arising out of, under or in connection with this Agreement. Each Party further waives any right to consolidate, or to request the consolidation of, any action in which a jury trial has been waived with any other action in which a jury trial cannot be or has not been waived.
- 9.5 Consistency with Federal Laws and Regulations.** This Agreement shall incorporate by reference Section 22.9 of the CAISO Tariff as if the references to the CAISO Tariff were referring to this Agreement.
- 9.6 Merger.** This Agreement constitutes the complete and final agreement of the Parties with respect to the subject matter hereof and supersedes all prior agreements, whether written or oral, with respect to such subject matter.
- 9.7 Severability.** If any term, covenant, or condition of this Agreement or the application or effect of any such term, covenant, or condition is held invalid as to any person, entity, or circumstance, or is determined to be unjust, unreasonable, unlawful, imprudent, or otherwise not in the public interest by any court or government agency of competent jurisdiction, then such term, covenant, or condition shall remain in force and effect to the maximum extent permitted by law, and all other terms, covenants, and conditions of this Agreement and their application shall not be affected thereby, but shall remain in force and effect and the Parties shall be relieved of their obligations only to the extent necessary to eliminate such regulatory or other determination

unless a court or governmental agency of competent jurisdiction holds that such provisions are not separable from all other provisions of this Agreement.

- 9.8 Amendments.** This Agreement may be amended from time to time by the mutual agreement of the Parties in writing. Amendments that require FERC approval shall not take effect until FERC has accepted such amendments for filing and made them effective. Nothing contained herein shall be construed as affecting in any way the right of the CAISO to unilaterally make application to FERC for a change in the rates, terms and conditions of this Agreement under Section 205 of the FPA and pursuant to FERC's rules and regulations promulgated thereunder, including Attachment A, and PNM and TEP shall have the right to make a unilateral filing with FERC to modify this Agreement pursuant to Section 206 or any other applicable provision of the FPA and FERC's rules and regulations thereunder; provided that each Party shall have the right to protest any such filing by any other Party and to participate fully in any proceeding before FERC in which such modifications may be considered. Nothing in this Agreement shall limit the rights of the Parties or of FERC under Sections 205 or 206 of the FPA and FERC's rules and regulations thereunder, except to the extent that the Parties otherwise mutually agree as provided herein.
- 9.9 Confidentiality.** Each Party's confidential information will be treated in accordance with Section 20 of the CAISO Tariff and any other applicable data sharing agreements in effect among the Parties.
- 9.10 Counterparts.** This Agreement may be executed in one or more counterparts at different times, each of which shall be regarded as an original and all of which, taken together, shall constitute one and the same Agreement.

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be duly executed on behalf of each by and through their authorized representatives as of the date hereinabove written.

California Independent System Operator Corporation

By: _____

Name: Khaled Abdul-Rahman

Title: Vice President, Market Systems and Technology

Date: _____

Public Service Company of New Mexico

By: _____

Name: _____

Title: _____

Date: _____

Tucson Electric Power

By: _____

Name: _____

Title: _____

Date: _____

ATTACHMENT A

SCOPE OF JOU MODEL IMPLEMENTATION AND JOU PILOT

[Sections 3.1 and 3.2]

I. Introduction

The learnings from the JOU Pilot will inform a future CAISO stakeholder process to consider the availability and application of the JOU Model solution more broadly in the CAISO Markets, which may lead to an amendment of the CAISO Tariff. In the meantime, this Attachment A to the Joint Owned Unit (JOU) Pilot Agreement supplements the CAISO Tariff as incorporated by Section 4.1 of the JOU Pilot Agreement and establishes the technical requirements for the JOU Pilot.

These technical requirements supplement the CAISO Tariff requirements for EIM Resource participation, including registration, modeling, bidding and settlement. Rules, procedures and requirements otherwise applicable to EIM Resource participation and operation of CAISO Market systems, including the associated data and integration requirements, shall continue to be governed by such other CAISO rules, procedures, and requirements, as applicable. Certain parameters described or referenced in this Attachment A are standard parameters in use in various CAISO systems, and may not be explicitly defined in the CAISO Tariff. These technical requirements—

- (a) Define the relationship between the JOU Parent Resource and the JOU Child Resources,
- (b) Establish what the JOU Resource operators Scheduling Coordinators are required to do, or are permitted or not permitted to do, and
- (c) Specify modifications of existing formulations or provide new formulations uniquely applicable to the JOU Pilot.

These technical requirements may be modified in accordance with Section 3.4 of the Agreement as may be necessary to resolve any conflict with CAISO Tariff provisions, ensure feasible outcomes from the JOU Pilot, increase the mutual benefit from the project, or account for unanticipated circumstances. Any changes to this Attachment A other than with respect to implementation details as provided in Section 3.4 of the Agreement, i.e., any change that affects the rates, terms and conditions of service, must be filed with FERC as an amendment in accordance with Section 9.8 of the Agreement.

II. JOU Model Implementation and JOU Pilot

Defined Terms and Acronyms

The following list of defined terms is in addition to any defined terms or acronyms described in the CAISO Tariff. Acronyms used throughout this Attachment A have been listed below although they may already be defined in the CAISO Business Practice

Manual for Definitions and Acronyms as posted on the CAISO website¹. Description of Master File parameters listed in this Attachment A can be found in the CAISO Business Practice Manual for Market Instruments as posted on the CAISO website².

1. JOU Resource: A Generating Unit with more than one entity receiving a share of its Energy and other attributes, where the shares are represented in different Balancing Authority Areas, either by their physical location or by pseudo-tie. It does not include shares represented in different Balancing Authority Areas via a dynamic schedule.
2. JOU Parent Resource: The modeled representation of the physical resource supporting the associated JOU Child Resources, as registered with the CAISO.
3. JOU Parent SC: Scheduling Coordinator entity representing the JOU Parent Resource.
4. JOU Child Resource: The logical models representing the shares of the JOU Parent Resource, as registered with the CAISO.
5. JOU Child SC: Scheduling Coordinator entity representing the JOU Child Resource.
6. Active JOU Child Resource: Active JOU Child Resource is a JOU Child Resource with Base Schedules or Bids in the Energy Imbalance Market for a given market interval.
7. Inactive JOU Child Resource: A JOU Child Resource without a Base Schedule or Bids in the Energy Imbalance Market for a given market interval.
8. Intermediate PMin: It is intermediate value of registered PMin calculated in accordance with Section 3.2 of this Attachment A.
9. LOL: Lower Operating Limit (taking into account PMin rerates)
10. Intermediate LOL: Intermediate Value of Lower Operating Limit
11. UOL: Upper Operating Limit (taking into account PMax derates)
12. LEL: Lower Economic Limit (Lower MW end of the SIBR bid)
13. UEL: Upper Economic Limit (Upper MW end of the SIBR bid)
14. DMLC: Default Minimum Load Cost
15. DSUC: Default Start Up Cost
16. DEB: Default Energy Bid
17. MLC: Minimum Load Cost
18. SUC: Start Up Cost (from bid for active children and summed up for parent)
19. Adjusted MLC: Adjusted Minimum Load Cost
20. Adjusted DMLC: Adjusted Default Minimum Load Cost
21. Adjusted SUC: Adjusted Start Up Cost
22. RIG: Remote Intelligence Gateway
23. GHG: Greenhouse Gas
24. DOT: Dispatch Operating Target
25. BAA: Balancing Authority Area
26. SUT: Start Up Time
27. MIN_OFF: Minimum Off Time

¹CAISO list of acronyms

<https://bpmcm.caiso.com/Pages/BPMDetails.aspx?BPM=Definitions%20and%20Acronyms>

² CAISO BPM for Market Instruments

<https://bpmcm.caiso.com/Pages/BPMDetails.aspx?BPM=Market%20Instruments>

- 28. LRL: Lower Regulation Limit
- 29. URL: Upper Regulation Limit

JOU Model Implementation and JOU Pilot

1. JOU Resource Registration

- 1.1. A JOU Child Resource registration and logical model type must correspond to the registration and logical model type of the JOU Parent Resource, in accordance with the provisions of this Attachment A.
- 1.2. The JOU Parent SC will register the JOU Parent Resource with the CAISO in accordance with established CAISO Tariff provisions and BPM processes applicable to the registration of EIM Non-Participating Resources. The JOU Parent SC must be the EIM Entity SC of its Native BAA. The Scheduling Coordinator ID code associated with the JOU Parent Resource must not be associated with any other Resource ID, except with a Resource ID representing another JOU Parent Resource.
- 1.3. The JOU Parent SC will register the mapping between JOU Child Resources and the JOU Parent Resource, including the percentage share associated with each JOU Child Resource. Any change in such shares may require an update to the registration of the JOU Child Resource through the applicable registration processes. These shares must be established as static values with the CAISO. The sum of percentage shares of all JOU Child Resources linked to a single JOU Parent Resource must equal 100 %.
- 1.4. The JOU Child Resource(s) of a JOU Parent Resource may be located in different BAAs, when established as a pseudo-tie from the Native BAA to the Attaining BAA.
- 1.5. The JOU Child SC must register the JOU Child Resource with the CAISO in accordance with established Tariff provisions and BPM processes applicable to the registration of EIM Participating Resources or EIM Non-Participating Resources.
 - 1.5.1. A JOU Child Resource registered as an EIM Non-Participating Resource must be represented by the EIM Entity SC of the BAA it is represented in either by physical location or pseudo-tie, as its JOU Child SC
 - 1.5.2. A JOU Child Resource is registered as an EIM Participating Resource, may be represented by any certified EIM Participating Resource SC as its JOU Child SC, but cannot be represented by the EIM Entity SC associated with its JOU Parent Resource.
 - 1.5.3. Each JOU Child Resource may have a different SC compared to the other JOU Child Resources linked to its JOU Parent Resource.
- 1.6. The CAISO will map the JOU Parent Resource to a Cnode.
- 1.7. If a JOU Child Resource and the JOU Parent Resource are in the same BAA; the JOU Child Resource will be mapped to a different Cnode but linked to the Cnode of its JOU parent resource.

- 1.8. If a JOU Child Resource and the JOU Parent Resource are in different BAAs; the JOU Child Resource will be mapped to a different Cnode in the Attaining BAA but linked to the Cnode of its JOU parent resource
- 1.9. JOU Parent Resources and JOU Child Resources will be modeled as model type Non-MSG Generator. All other model types as listed below will not be available to JOU Parent Resources and JOU Child Resources:
 - NGR (including hybrid resources)
 - PDR
 - COG
 - Participating Load
 - PSH
 - Use Limited (UL)
 - MSG
- 1.10. The JOU Parent SC and JOU Child SC may register the following Master File parameters independently for their respective resources. An example of such parameters have been provided below. The CAISO will provide the entire list of applicable Master File parameters to the Parties as part of the JOU Model and JOU Pilot implementation, which will supersede this list below.
 - BAA
 - SC
 - RC Entity
 - Resource ID
 - Parent/Child Identification
 - PMin
 - PMax
 - Fuel region
 - Lower Regulation Limit (MW)
 - Upper Regulation Limit (MW)
 - Ramp_MW_Output
 - Ramp_Min_Rate
 - Ramp_Max_Rate
 - Meter Data Interval
 - CAISO Polled Flag
 - BSC
 - JOU Parent Mapping
 - Percentage Share
 - DAM Certification Flag
 - RTM Certification Flag
 - EIM Participation Flag
 - HEAT_HEAT_RATE
 - HEAT_MW_OUTPUT

- Others (as provided by the CAISO)
- 1.10.1. The JOU Child SC will be allowed to register the heat rate for its JOU Child Resource in Master File, under the sole condition that the new heat rate it seeks to register has been used to establish the currently effective Negotiated Rate Option DEB.
- 1.11. With regards to the registration of PMin and Lower Regulation Limit for JOU Child Resources:
- 1.11.1. If the sum of the individual PMin or LRL of each JOU Child Resource is less than the individual PMin or LRL of the JOU Parent Resource, and the individual PMin or LRL of the JOU Parent Resource is greater than or equal to the product of the total number of JOU Child Resources multiplied times 1 MW; the JOU Child SC may register their PMin or LRL capacities at 1 MW.
- 1.11.2. If the sum of the individual PMin or LRL of each JOU Child Resource is equal to the individual PMin of the JOU Parent Resource, or the individual PMin or LRL of the JOU Parent Resource is less than the product of the total number of JOU children multiplied times 1 MW; the JOU Child SC may register the PMin or LRL capacities of their resources at their individual values
- 1.11.3. If the sum of the individual PMin or LRL values of the JOU Child Resources exceed the individual PMin or LRL value of the JOU Parent Resource, the JOU Child SC will not be allowed to register the individual PMin or LRL values of the JOU Child Resources.
- 1.11.4. The individual PMax and URL value of the JOU Parent Resource must equal the sum of the individual PMax and URL values of the associated JOU Child Resources.
- 1.12. The Master File registered ramp rate values for each JOU Child Resource will be limited a single segment extending from the PMin to the PMax. The sum of the Master File registered ramp rates of the JOU Child Resources must not exceed the Master File registered maximum ramp rate of the JOU Parent Resource.
- 1.13. The JOU Parent SC will register the Master File parameters for the JOU Parent Resource as applicable and the corresponding parameters for the JOU Child Resource will be derived as described in the following table. All parameters marked as “x” under the column titled “Child Match Parent” must be submitted solely for the JOU Parent Resource, and will not be considered applicable if they are submitted for the JOU Child Resource. The column titled “Special Child Derivation” identifies any derivation principles or methodologies for Master File parameters submitted at the JOU Parent Resource level. The CAISO will provide the entire list of parameters to the Parties as part of the JOU Model and JOU Pilot implementation, which will supersede the list provided below.

Master File Parameter	Child Match Parent	Special Child Derivation
JOU Flag	x	

Master File Parameter	Child Match Parent	Special Child Derivation
Fuel Type	x	
Technology Type	x	
AS flags (spin, non-spin, regulation)	x	
Ramp Up/Down	x	
MDS	x	
MDT	x	
MUT	x	
SU Ramp Time	x	
LMP Eligibility Flag	x	
Heat Emission Rate		Null
Start Down Time (aka Cooling Time)	x	
SUT	x	
Default GDF	x	
DEB Options Ranking	x	
Default DEB Options Ranking	x	
GHG Emission Rate	x	
GHG Compliance Obligation Flag	x	
VOMC	x	
SUC		Null
SUE		Null
SUF		Null
HAVGC		Null
ROPR (applicable to Min, Max and Market ramp rates)		Null
RREG (applicable to Min, Max and Market ramp rates)		Null
Lower Forbidden Region MW (LFR)		Null

Master File Parameter	Child Match Parent	Special Child Derivation
Upper Forbidden Region MW (UFR)		Null
Forbidden Region Crossing Time (FRCT)		Null

1.13.1. The JOU Child SC must ensure that the JOU Child Resource name will be structured in a manner to provide ease of reference to the associated JOU Parent Resource. The CAISO may reject the proposed name from the JOU Child SC if it does not create ease of reference to the JOU Parent Resource name.

2. Telemetry Requirements

2.1. The JOU Parent SC is limited to and required to submit the physical telemetry and Meter Data for the JOU Parent Resource, and the JOU Child SC is limited to and required to submit the logical telemetry and Meter Data for the JOU Child Resource.

2.2. Regarding JOU Parent Resource and JOU Child Resources that are certified for AS, the JOU Parent SC and JOU Child SC must submit direct telemetry for their respective resources using a real-time device or RIG.

3. Calculated Costs for JOU Resources

3.1. The JOU Child Resource will receive the same greenhouse gas maximum compliance cost calculated for the JOU Parent Resource.

3.2. The calculation of the Intermediate PMin of the JOU Child Resource will be as follows:

3.2.1. If the sum of the individual PMin of the JOU Child Resources equal the PMin of the JOU Parent Resource, the Intermediate PMin of the JOU Child Resource will be equal to its PMin.

3.2.2. If the sum of the individual PMin of the JOU Child Resources does not equal the PMin of the JOU Parent Resource:

3.2.2.1. The Intermediate PMin of each JOU Child Resource will be the maximum of the individual PMin and pro-rata PMin of the JOU Child Resource, where the pro-rata PMin is the product of the PMin of the JOU Parent Resource and the percentage share associated with the JOU Child Resource.

3.2.3. The calculation of the Intermediate LOL will follow the same methodology, replacing PMin with LOL in the calculations.

3.3. The manual consult price will be calculated solely for the JOU Parent Resource.

3.4. The Negotiated Rate Option is the sole DEB option available to JOU Parent Resources and JOU Child Resources. Each JOU Child SC will be responsible for establishing the Negotiated Rate Option DEB for its JOU Child Resource.

- 3.5. The energy price index calculated for the JOU Parent Resource will be applied to its JOU Child Resources.
- 3.6. The negotiated major maintenance adder of the Minimum Load Cost and Start-Up Cost established for the JOU Parent Resource will be applied to its JOU Child Resources using a pro-rata allocation based on the percentage share associated with each JOU Child Resource. The JOU Parent SC will be responsible for applying for the negotiated major maintenance adder.

4. Outage Management for JOU Resources

- 4.1. The JOU Parent SC will be allowed to submit and view outages solely for the JOU Parent Resource.
- 4.2. The JOU Parent SC may view outages applicable to its JOU Child Resources only if authorized by the applicable JOU Child SC. The JOU Child SC may delegate authority to the JOU Parent SC of its JOU Parent Resource to submit outages on its behalf.
- 4.3. The JOU Child SC will be allowed to submit and view outages solely for the JOU Child Resource it represents. The table below describes the categories of outages that can be submitted for the JOU Parent Resource and the JOU Child Resource. For those outages that can only be submitted for the JOU Parent Resource, the outages will be translated for application to the JOU Child Resource in the manner described below.
 - 4.3.1. A PMin re-rate outage on JOU Parent Resource will be applied to its JOU Child Resources in accordance with calculation methodology for Intermediate LOL described in this Attachment A.
 - 4.3.2. An out of service outage on JOU Parent Resource will set the same out of service outage status for its JOU Child Resources, including any subsequent modifications to this outage status.
 - 4.3.3. A ramp rate de-rate outage on JOU Parent Resource will be applied to its JOU Child Resources as described in this Attachment A.

Outage Category	Allowed to be submitted for JOU Parent Resource	Allowed to be submitted for JOU Child Resource
Out Of Service	X	
Pmin Rerate	X	
Pmax Derate	X	X
Ramp rate Derate	X	

- 4.4. The JOU Child SC will not be allowed to view outages on the JOU Parent Resource or other associated JOU Child Resources, unless the JOU Child SC is authorized to view outages applicable to another JOU Child Resource by the responsible JOU Child SC.
- 4.5. This scaling factor methodology is applied when JOU Parent Resource Master File registered ramp rate is subject to de-rates. A scaling factor is calculated by utilizing the following methodology and the values applicable to the JOU Parent Resource: the de-rated highest ramp rate segment divided by the Master File registered

- highest ramp rate segment. The de-rates of the JOU Parent Resource Master File registered ramp rates will be translated to the JOU Child Resources by multiplying the JOU Child Resource's Master File registered ramp rates with the scaling factor.
- 4.6. The treatment of overlapping outages between the JOU Parent Resource and its JOU Child Resources will be treated in accordance with the outage management provisions of the CAISO Tariff applicable to EIM Resources.
 - 4.7. If an out of service outage on the entire JOU Parent Resource is applied to its JOU Child Resources, the JOU Child SC will be allowed to view, but not edit, the translated outage data on its JOU Child Resource.

5. Market Participation for JOU Resources

- 5.1. The JOU Child Resource will be allowed to participate in the Energy Imbalance Market in the same manner as an EIM Participating Resource in accordance with the CAISO Tariff and this Attachment A. The JOU Child Resources of a single JOU Parent Resource will be allowed to have different Energy and Flexible Ramp Up/Down bids. The JOU Child SC will be allowed to only view the Bids it has submitted. The JOU Child SC will be allowed to view aggregated operational information related to the total schedule applicable to its JOU Parent Resource, with this functionality being available at a date later than the TEP Implementation Date.
- 5.2. The JOU Parent SC will not be allowed to submit Bids and Base Schedules, or provision Ancillary Services. The JOU Parent SC will not be allowed to view any Bids or Base Schedules it has not submitted.
 - 5.2.1. The aggregated Base Schedule information applicable to the JOU Parent Resource may be viewed by its Balancing Authority Area Entity.
- 5.3. The JOU Child SC and the JOU Parent SC may not submit a revised DEB curve as part of the Variable Cost Option for establishing a DEB, with the Variable Cost option not being available for JOU Resources..
- 5.4. The Default SUC and Default MLC calculated for the JOU Parent Resource will be applied to the JOU Child Resource in a pro-rata manner using the percentage share associated with each JOU Child Resource. A JOU Child SC will only be allowed to view the calculated Default SUC and Default MLC for its JOU Child Resource, irrespective of whether it is an Active or Inactive JOU Child Resource.
- 5.5. The Reasonableness Threshold will not be calculated for the JOU Parent Resource or the JOU Child Resource.
- 5.6. The JOU Child SC may submit revised values of the Default SUC and Default MLC for an Active JOU Child Resource, and will have the sole right to access and view the submittals. The submitted revised Default SUC and Default MLC for Active JOU Child Resources will be validated by the CAISO.
- 5.7. The JOU Child SC will have the sole right to submit and view the Base Schedules for Energy and Ancillary Services for the JOU Child Resource.
- 5.8. The submitted Base Schedules on the JOU Child Resources will be deemed valid even if the aggregate of the Base Schedules is lower than the PMin of the JOU Parent Resource. The submittal and the validation of the Base Schedules will

result in the JOU Parent Resource being deemed to be in Start-Up subject to existing additional conditions defined below under Section 5.9.

- 5.9. The JOU Parent Resource will be recognized to be in Start-Up mode when it meets the same conditions applicable to EIM Resources. If the JOU Parent Resource is recognized to not be in Start-Up mode, it will retain its current Commitment Status. If the JOU Parent Resource retains its Commitment Status as "Off", the submitted Base Schedules are ignored. "
- 5.10. The Real-Time Base Schedule balancing test and the flexible ramp test will utilize the submitted Base Schedules of the JOU Child Resources. The flexible ramp test will utilize the Master File registered ramp rate of the JOU Child Resources, subject to adjustments due to de-rates or revisions of the Master File registered ramp rate of the JOU Parent Resource.
- 5.11. While the JOU Parent Resource is in Start-Up, no Bids for the JOU Child Resources will be utilized in RTM, and only zero MW DOTs for the JOU Child Resources will be created.
- 5.12. When a JOU Parent Resource has Inactive JOU Child Resources, the Default SUC of the Inactive JOU Child Resource will be allocated to the Active JOU Child Resources in proportion to their relative percentage shares.

*Adjusted SUC (due to Inactive JOU Child Resource) = Sum of Default SUC of all Inactive JOU Child Resources * (ratio of percentage share of Active JOU Child Resource over the sum of percentage shares of all Active JOU Child Resources.)*

The allocation of Default MLC of the Inactive JOU Child Resources will follow the above-described formula, by replacing SUC with MLC.

- 5.13. When a JOU Parent Resource has a PMin re-rate, the MLC of all Active JOU Child Resources and the Default MLC of Inactive JOU Child Resources, will be adjusted in accordance with the CAISO Tariff, considering any Intermediate PMin or Intermediate LOL created for the JOU Child Resource. Any such adjustment will have priority over any re-allocation of the Default MLC of an Inactive JOU Child Resource to the Default MLC of Active Child Resources of the same JOU Parent Resource.

- 5.13.1. The Adjusted MLC (for Active JOU Child Resources) and Adjusted Default MLC (for all JOU Child Resources) is equal to the sum of the MLC (for Adjusted MLC) or Default MLC (for adjusted Default MLC), and the product of the DEB and the difference between the calculated Intermediate LOL and Intermediate PMin.

*Adjusted MLC or Adjusted DMLC (due to PMin re-rate) = MLC or Default MLC * (DEB * [Intermediate LOL - Intermediate PMin])*

- 5.13.2. When a JOU Parent Resource has a PMin re-rate as well as Inactive JOU Child Resources, the Adjusted MLC is calculated as follows:

The Adjusted MLC derived under Section 5.13.1 of this Attachment A is now adjusted using the formula applied towards adjustment of MLC of Active JOU Child Resources to re-allocate the Default MLC of Inactive JOU Child Resources.

*Adjusted MLC (due to Inactive JOU Child Resource) = Adjusted MLC (due to PMin re-rate) + (Adjusted DMLC of Inactive JOU Child Resource * [ratio of percentage share of Active JOU Child Resource over the sum of percentage shares of all Active JOU Child Resources])*

- 5.14. The Adjusted MLC and Adjusted SUC of the JOU Parent Resource will be the sum of the Adjusted MLCs and Adjusted SUCs of all its Active JOU Child Resources, respectively, when such adjustments are made in accordance with Sections 5.12 and 5.13 of this Attachment A.
- 5.15. The JOU Child Resources will be constrained to the same Commitment Status as the JOU Parent Resource.
- 5.16. There will be no Commitment Costs modeled for a JOU Parent Resource during its Self-Commitment Period, when the JOU Parent Resource is in a Self-Commitment Period due to one or more of its JOU Child Resources being subject to a Self-Commitment Period.
- 5.17. When one JOU Child Resource submits a Self-Schedule or a Base Schedule, all Active JOU Child Resources belonging to the same JOU Parent Resource will be entered into a Self-Commitment Period.
- 5.17.1. The JOU Parent Resource of these JOU Child Resources will also be entered into a Self-Commitment Period.
- 5.18. The JOU Parent Resource will be constrained by certain physical constraints during its Commitment Period as identified below:
- PMax
 - PMin
 - Lower Regulation Limit
 - Lower Forbidden Region
 - Upper Forbidden Region
 - Ramp rate
 - Physical transmission constraints

The constraints enforced on the JOU Parent Resource will not be enforced on the JOU Child Resource Ramp Rates.

- 5.19. JOU Child Resource schedules will be constrained by various limits during its Commitment Period as identified below:
- Power balance constraint of the Native BAA or Attaining BAA
 - Scheduling limits of the Native BAA or Attaining BAA
 - Capacity constraints and scheduling limits of the JOU Child Resource.
 - Lower Economic Limit and Upper Economic Limit of JOU Child Resource

- 5.20. For a JOU Child Resource that is registered as an EIM Participating Resource, the GHG allocation to the various GHG compliance areas will be calculated using its EIM Bid Adder.
- 5.21. JOU Child Resources will have the LMPM eligibility flag enabled automatically if their JOU Parent Resource has the LMPM eligibility flag enabled, and the Dynamic Competitive Path Assessment process will mitigate the JOU Child Resource to its DEB if applicable.
- 5.22. The calculation of the counter flow capacity will be calculated using the registered attributes of the JOU Child Resources
- 5.23. There may be restrictions imposed on EIM Manual Dispatch Instructions submitted by the Native BAA to dispatch the Start-Up or Shut-Down of a JOU Parent Resource. The Native BAA will have the sole right to submit these Start-Up or Shut-Down instructions and such instructions will be communicated to the JOU Parent SC.
- 5.24. The Attaining BAA of the JOU Child Resource will not be allowed to submit EIM Manual Dispatch Instructions affecting its Start-Up or Shut-Down, but can do so for dispatching it to a certain MW level. These instructions will be communicated to the JOU Child SC.
- 5.25. All EIM Manual Dispatch Instructions on a JOU Parent Resource will be applicable to its JOU Child Resources as well.
- 5.26. When a JOU Parent Resource is subject to EIM Manual Dispatch Instruction for Start-Up and there are no corresponding EIM Manual Dispatch Instructions on the JOU Child Resources, there will be EIM Manual Dispatch Instructions created for its JOU Child Resources to dispatch them to the appropriate MW value to support the JOU Parent Resource Commitment Period. These EIM Manual Dispatch Instructions will dispatch the Active JOU Child Resources to the PMin, if the sum of the individual PMin of the JOU Child Resources equals the PMin of the JOU Parent Resource; otherwise the Active JOU Child Resources will be dispatched to the appropriate MW level to ensure that the sum of their individual dispatched MW levels equals the PMin of the JOU Parent Resource. If the dispatch of the Active Child Resources to their maximum available MW capacity results in an aggregate MW level lower than the PMin of the JOU Parent Resource, there will be EIM Manual Dispatch Instructions created for Inactive JOU Child Resources as well, such that the aggregate MW level of dispatch considering all the JOU Child Resources equals the PMin of the JOU Parent.
- 5.26.1. If the EIM Manual Dispatch Instruction for Start-Up of the JOU Parent Resource is a verbal post-market EIM Manual Dispatch Instruction and there are no corresponding EIM Manual Dispatch Instructions on the JOU Child Resources, there will be EIM Manual Dispatch Instructions created for the JOU Child Resources to dispatch them to their Intermediate PMin.
- 5.27. When a JOU Parent Resource is subject to EIM Manual Dispatch Instruction for Shut-Down, there will be new EIM Manual Dispatch Instructions created or existing EIM Manual Dispatch Instructions modified for its Active JOU

Child Resources to dispatch them to zero (0) MW value to support the JOU Parent Resource Commitment Period.

5.27.1. If the EIM Manual Dispatch Instruction that dispatches the JOU Parent Resource to Shut-Down is a verbal post-market EIM Manual Dispatch Instruction, there will be EIM Manual Dispatch Instructions created for the JOU Child Resources to dispatch them to 0 MW. The dispatch to zero MW will only apply to Active JOU Child Resources unless all JOU Child Resources are Inactive JOU Child Resources.

5.28. If the EIM Manual Dispatch Instructions for a JOU Parent Resource or a JOU Child Resource conflict with previous EIM Manual Dispatch Instructions, or apply to an Inactive JOU Child Resource, the following actions will be taken:

5.28.1. The Native BAA and Attaining BAA will be notified of the conflict, and will individually and jointly be responsible for the resolution of such identified conflicts,

5.28.2. The JOU Parent SC and JOU Child SC will be notified of the conflict.

5.29. All EIM Manual Dispatch Instructions submitted for the JOU Child Resources will be aggregated and applied to its JOU Parent Resource, if the EIM Manual Dispatch Instructions are of the same type and can be aggregated. Such EIM Manual Dispatch Instructions will be communicated to the Native BAA and the JOU Parent SC.

5.30. The Schedules and Dispatch Instructions applicable to the JOU Child Resources will be utilized to construct appropriate Schedules and Dispatch Instructions for the JOU Parent Resource. For the JOU Parent Resource, an Energy Schedule will be derived as the sum of Energy Schedules of all of its JOU Child Resources.

5.31. There will be no calculation of Expected Energy, Expected Energy allocation, or commodity allocation, for a JOU Parent Resource.

5.32. If the Base Schedules of the JOU Child Resources associated with the same JOU Parent Resource, in aggregate, is lower than the PMin of the JOU Parent Resource, the Expected Energy of the JOU Child Resource will be calculated in accordance with the following methodology:

5.32.1. If all the Dispatch Operating Targets of the JOU Child Resources are zero, the JOU Parent Resource will be considered to be in Start-Up, and the Expected Energy for all the JOU Child Resources will be calculated in accordance with EIM Base Schedule submission deadline rules.

5.32.2. If any of the Dispatch Operating Targets of the JOU Child Resources are greater than 0.01 MW, the JOU Parent Resource is considered to be in Commitment Status type "On", and Expected Energy for all the JOU Child Resources will be calculated in accordance with the CAISO Tariff.

5.33. If the Base Schedules of the JOU Child Resources associated with the same JOU Parent Resource, in aggregate, is equal to or higher than the PMin of the JOU Parent Resource, the Expected Energy of the JOU Child Resource will be

calculated in accordance with the CAISO Tariff provisions applicable to EIM Resources.

5.34. The JOU Parent SC will only receive access to the data published for its JOU Parent Resource, while the JOU Child SC will only receive access to the data published pertaining to its JOU Child Resource.

5.35. The JOU Parent SC will only receive access to ADS Instructions associated with its JOU Parent Resource, while the JOU Child SC will only receive access to ADS instructions associated with its JOU Child Resource.

5.36. The Start-Up Time submitted as part of the Start-Up Bid for a JOU Child Resource will be rejected, if it does not precisely match the Start-Up Time registered in Master File for the corresponding JOU Child Resource.

6. Metering

6.1. The JOU Parent SC will ensure that revenue grade meters are utilized for the purposes of submitting physical Meter Data to CAISO for the JOU Parent Resource. The CAISO will not use any Meter Data submitted by the JOU Parent SC for the JOU Parent Resource, for settling any Charge Codes.

6.2. For a JOU Child Resource, its JOU Child SC will submit Meter Data in accordance with the particular JOU Child Resource's SQMD Plan. For the purposes of the SQMD Plan, the JOU Child SC will ensure metering devices are established at the respective Inter-Ties where the Energy from the JOU Child Resource is measured.

6.3. The JOU Parent SC of the JOU Parent Resource and JOU Child SCs of its JOU Child Resources will ensure that their submitted Meter data have an equal level of granularity.

6.4. All T + 52B Meter Data submitted for a JOU Parent Resource will be compared against its JOU Child Resources, and the Meter Data for both types of resources will fail validation if their difference is outside of the specified tolerance. This specified tolerance is established to account for numerical rounding errors caused by the utilization of JOU Parent Resource Meter Data for purposes of logically calculating JOU Child Resource Meter Data. The Meter Data for the JOU Child Resources that failed validation will still be used for Settlements without any modification by CAISO. A daily report, detailing the Meter Data intervals that failed validation and associated supporting information, will be generated and provided to the applicable JOU Parent SC's and JOU Child SC's. The JOU Parent SC and JOU Child SCs are responsible for correcting and re-submitting the Meter Data intervals that failed validation, and failure to do so will be addressed in accordance with CAISO Tariff provisions applicable to Meter Data submissions.

7. Settlements

7.1. All JOU Child Resources will be subject to Settlement in accordance with the CAISO Tariff provisions applicable to EIM Participating Resources and EIM non-participating resources. The JOU Parent Resource will not be subject to any Settlement, nor will there be any administrative fees or charges applicable to the JOU Parent Resource with respect to the implementation and operation of the unique Scheduling Coordinator ID code associated with the JOU Parent Resource.

- 7.2. As part of the Bid Cost Recovery process, commitment cost qualification calculations will be performed for the JOU Parent Resource by comparing the submitted Meter Data and effective PMin (and any LOL) of the JOU Parent Resource. All JOU Child Resources of the JOU Parent Resource will receive the outcome of this commitment cost qualification process.
- 7.3. For calculating the Persistent Deviation Metric and Real-Time Performance Metric, there will be a ramp rate calculated for the JOU Child Resources in the following manner: the delta of the DOTs from consecutive Settlement Intervals divided the time difference between those Settlement Intervals.

ATTACHMENT B**NOTICES****[Sections 9.2]****PNM**

Designated Executive: Todd Fridley
Title: Vice-President PNM NM Operations
Email address: Todd.Fridley@PNM.Com

Name of Primary Contact

for Notices: Adam Alvarez
Title: Senior Project Manager, Regulatory
Company: Public Service Company of New Mexico
Address: 414 Silver Ave SW, MS 1105
City/State/Zip Code: Albuquerque, NM 87102-3289
Email Address: Adam.Alvarez@PNM.Com
Phone: 505-241-2849

Name of Alternative Contact

for Notices:
Title: PNM BA EIM Manager
Company: Public Service Company of New Mexico
Address: 414 Silver Ave SW, MS-EP11
City/State/Zip Code: Albuquerque, NM 87105-0433
Email Address: zz-PNM-BA-EIM-Manager@pnmresources.com
Phone: 505-241-4517

Technical representative regarding Attachment A

TEP

Designated Executive: Erik Bakken

Title: Vice President System Operations & Energy Resources

Email address: EBakken@tep.com

Name of Primary Contact

for Notices: Blake Pederson

Title: Director Wholesale Marketing

Company: Tucson Electric Power Company

Address: 88 E. Broadway

City/State/Zip Code: Tucson, AZ 85701

Email Address: BPederson@tep.com

Phone: (520) 548-0046 (mobile)

Name of Alternative Contact

for Notices: TEP Legal Department

Company: Tucson Electric Power Company

Address: 88 E. Broadway

City/State/Zip Code: Tucson, AZ 85701

Email Address: LegalNotices@tep.com

Technical representative regarding Attachment A

Name of Primary Contact

for Notices: Blake Pederson

Title: Director Wholesale Marketing

Company: Tucson Electric Power Company

Address: 88 E. Broadway

City/State/Zip Code: Tucson, AZ 85701

Email Address: BPederson@tep.com

Phone: (520) 548-0046 (mobile)

CAISO

Designated Executive: Khaled Abdul-Rahman
Title: Vice President, Market Systems and Technology
Email address: KAbdulrahman@caiso.com

Name of Contact
For Notices: Regulatory Contracts
Title: N/A
Address: 250 Outcropping Way
City/State/Zip Code: Folsom, CA 95630
Email address: RegulatoryContracts@caiso.com
Phone: (916) 351-4400
Fax: (916) 608-5063

Name of Alternative
Contact for Notices: Christopher J. Sibley
Title: Manager, Regulatory Contracts
Address: 250 Outcropping Way
City/State/Zip Code: Folsom, CA 95630
Email address: csibley@caiso.com
Phone: (916) 608-7030
Fax: (916) 608-5063

Technical representative regarding Attachment A

**Attachment 3 – Red-lined version of the Pilot Agreement revised by the
Amendment**

Amendment No. 1 to Joint Owned Unit Pilot Agreement

California Independent Systems Operator Corporation

March 18, 2022

**CALIFORNIA INDEPENDENT SYSTEM
OPERATOR CORPORATION**

**PUBLIC SERVICE COMPANY OF
NEW MEXICO**

AND

TUCSON ELECTRIC POWER

**JOINT OWNED UNIT
PILOT AGREEMENT**

JOINT OWNED UNIT PILOT AGREEMENT

THIS JOINT OWNED UNIT PILOT AGREEMENT (“AGREEMENT”) is established this ___ day of _____, 2021, and is accepted by and among:

(1) **Public Service Company of New Mexico (“PNM”)**, a New Mexico corporation having its registered and principal executive office at 414 Silver Avenue, SW, MS 1105, Albuquerque, NM 87102-3289,

(2) **Tucson Electric Power (“TEP”)**, an Arizona corporation having its registered and principal executive office at 88 East Broadway Blvd., Tucson, AZ 85701,

and

(3) **California Independent System Operator Corporation (“CAISO”)**, a California nonprofit public benefit corporation having a principal executive office located at such place in the State of California as the CAISO Governing Board may from time to time designate.

PNM, TEP and the CAISO are hereinafter referred to as the “Parties.”

Whereas:

- A. ~~PNM joined the Energy Imbalance Market on April 1, 2021 and TEP is expected to join the EIM on April 1, 2022~~PNM joined the Energy Imbalance Market on April 1, 2021 and TEP is expected to join the EIM on May 3, 2022. (“TEP Implementation Date”).
- B. PNM hosts the Luna Energy Facility within its Balancing Authority Area and dynamically transfers some portions of the associated Generating Units to the TEP Balancing Authority Area.
- C. The CAISO supports dynamic transfers in the EIM, including the opportunity for shared Pseudo-Ties from a Generating Unit in an EIM Entity Balancing Authority Area to be dynamically transferred into the CAISO Balancing Authority Area, and is interested in piloting its recently developed joint owned unit modeling functionality (“JOU Model”) prior to considering CAISO Tariff changes to extend the functionality to all eligible CAISO Market Participants.
- D. PNM and TEP would benefit from having this functionality available when TEP joins the EIM so that shares of Pseudo-Tied resources dynamically transferred from the PNM Balancing Authority Area to the TEP Balancing Authority Area

are more accurately modeled in the EIM, and both are willing to participate in a JOU Model pilot together with the CAISO (“JOU Pilot”).

- E. Only the PNM shares and the shares of Pseudo-Tied resources dynamically transferred from the PNM Balancing Authority Area to the TEP Balancing Authority Area will be specifically included in the JOU Pilot.
- F. The Parties are entering into this Agreement to provide for the scope of work to implement the JOU Model and to support the ongoing JOU Pilot.

NOW THEREFORE, in consideration of the mutual covenants set forth herein, **THE PARTIES AGREE** as follows:

ARTICLE I DEFINITIONS AND INTERPRETATION

- 1.1 Master Definitions Supplement.** All capitalized terms and expressions used and not otherwise defined in this Agreement shall have the same meaning as those contained in the Master Definitions Supplement to the CAISO Tariff.
- 1.2 Rules of Interpretation.** The following rules of interpretation and conventions shall apply to this Agreement:
 - (a) if and to the extent a matter is specifically addressed by a provision of this Agreement, the provision of this Agreement shall govern notwithstanding any inconsistent provisions of the CAISO Tariff;
 - (b) if and to the extent this Agreement provides that a matter shall be determined in accordance with the applicable provisions of the CAISO Tariff, the applicable provisions of the CAISO Tariff shall govern;
 - (c) the singular shall include the plural and vice versa;
 - (d) the masculine shall include the feminine and neutral and vice versa;
 - (e) “includes” or “including” shall mean “including without limitation”;
 - (f) references to a Section, Article or Schedule shall mean a Section, Article or a Schedule of this Agreement, as the case may be, unless the context otherwise requires;
 - (g) a reference to a given agreement or instrument shall be a reference to that agreement or instrument as modified, amended, supplemented or restated through the date as of which such reference is made;

- (h) unless the context otherwise requires, references to any law shall be deemed references to such law as it may be amended, replaced or restated from time to time;
- (i) unless the context otherwise requires, any reference to a “person” includes any individual, partnership, firm, company, corporation, joint venture, trust, association, organization or other entity, in each case whether or not having separate legal personality;
- (j) unless the context otherwise requires, any reference to a Party includes a reference to its permitted successors and assigns;
- (k) any reference to a day, week, month or year is to a calendar day, week, month or year;
- (l) unless the context requires otherwise, “or” is used in the conjunctive sense; and
- (m) the captions and headings in this Agreement are inserted solely to facilitate reference and shall have no bearing upon the interpretation of any of the terms and conditions of this Agreement.

ARTICLE II TERM AND TERMINATION

2.1 Effective Date. This Agreement shall become effective upon the TEP Implementation Date or such other date as the Agreement may be accepted, approved or otherwise permitted to take effect by FERC, without condition or modification unsatisfactory to any Party (“Effective Date”), and shall remain in full force and effect until terminated pursuant to Section 2.2 of this Agreement. The Parties understand and acknowledge that the *pro forma* CAISO Energy Imbalance Market service agreements must be effective and include the resource information necessary to support the JOU Pilot.

2.1.1 Modification by FERC. In the event FERC requires any modification to the Agreement or imposes any other condition upon its acceptance or approval of the Agreement, each Party shall have ten (10) days to notify the other Parties that any such modification or condition is unacceptable to that Party. If no Party provides such notice, then the Agreement, as modified or conditioned by FERC, shall take effect as of the date determined under section 2.1. If any Party provides such notice to the other Parties, the Parties shall take any one or more of the following actions: (i) meet and confer and agree to accept any modifications or conditions imposed by such FERC order; (ii) jointly seek further administrative or legal remedies with respect to such FERC order, including a request for rehearing or clarification; or (iii) enter into negotiations

with respect to accommodation of such FERC order, provided however, if the Parties have not agreed to such an accommodation within thirty (30) days after the date on which such FERC order becomes a final and non-appealable order, such order shall be deemed an adverse order and the Parties shall have no further rights and obligations under this Agreement.

2.2 Termination. The Parties may mutually agree to terminate this Agreement in writing at any time with six (6) months' notice, and this Agreement will automatically terminate three years after the Effective Date unless amended by the Parties. In addition, the CAISO may terminate this Agreement in accordance with Section 2.2.1 and PNM or TEP may terminate this Agreement in accordance with Section 2.2.2. The Parties acknowledge that in any case the CAISO is required to file a timely notice of termination with FERC, and that this Agreement will terminate upon acceptance by FERC of such a notice of termination in accordance with FERC requirements. In the event this Agreement is terminated, this Agreement will become wholly void and of no further force and effect, and the liabilities and obligations of the Parties hereunder will terminate, and each Party shall be fully released and discharged from any liability or obligation under this Agreement unless survival is otherwise provided.

2.2.1 Termination by CAISO. The CAISO may terminate this Agreement by giving written notice of termination pursuant to the CAISO Tariff six (6) months prior to the termination in the event that: (1) PNM or TEP materially default under this Agreement provided that, if capable of being remedied, the default is not remedied within thirty (30) days after the CAISO has given written notice of the default; (2) the Parties are unable to reach agreement on a change to Attachment A as provided in Section 3.4 or 5.2; or (3) the CAISO reasonably determines prior to the start of JOU Pilot that the JOU Model will adversely impact the EIM.

2.2.2 Termination by PNM or TEP. In the event that PNM or TEP no longer wishes to pursue the JOU Pilot with the CAISO, it must first notify the CAISO in writing of its intent to terminate ("Notice of Intent to Terminate") and engage in thirty (30) days of good faith negotiations in an effort to resolve its concerns. If the Parties successfully resolve the concerns, PNM or TEP as applicable must notify the CAISO in writing of the withdrawal of such notice ("Notice of Resolution"). Otherwise, PNM or TEP as applicable may terminate this Agreement in its sole discretion and for any reason by providing written notice to the CAISO that it is terminating this Agreement six (6) months in advance of the termination ("Termination Notice"). A Termination Notice from either PNM or TEP will terminate this Agreement.

2.3 No Termination Charge. The CAISO shall not levy an exit fee or other charge associated with CAISO systems, procedures, or other changes that may be required by the termination of this Agreement by either Party.

ARTICLE III SCOPE OF WORK AND SERVICES

- 3.1 Scope of Implementation Work.** The Parties will complete the work necessary to implement the JOU Model as described in Attachment A.
- 3.2 Scope of Services.** The Parties will perform the tasks necessary to engage in the JOU Pilot as described in Attachment A.
- 3.3 Charges.** The Parties will each be separately responsible for any and all costs associated with implementation of the JOU Model or participation in the JOU Pilot, provided the CAISO will settle all applicable EIM related charges during the JOU Pilot in accordance with the CAISO Tariff.
- 3.4 Changes to Attachment A.** Either Party may propose a change in Attachment A to the other Party. If a Party proposes a change in Attachment A, the Parties shall negotiate in good faith to attempt to reach agreement on the proposal, any necessary changes in Attachment A and any other affected provision of this Agreement. The agreement of the Parties to a change in Attachment A must be memorialized in a revision to Attachment A and authorized by the Parties' designated executives in Attachment B, which will then be binding on the Parties without the need for execution of an amendment to this Agreement provided the changes constitute implementation details. For purposes of this Agreement, "designated executive" shall mean the individual identified in Attachment B, or their designee or successor. Changes to any provision of this Agreement other than implementation details in Attachment A must be reflected in an executed amendment to this Agreement, and be accepted by FERC to be binding on the Parties. Any change to Attachment A that affects the rates, terms and conditions of service, must be filed with FERC as an amendment
- 3.5 Review Meetings**

The Parties will confer and agree on the framework for conducting periodic meetings to review and discuss the progress of the JOU Pilot. Issues and concerns identified at these meetings by any Party may be resolved in accordance with Sections 3.4, 5.1, and 5.2, as applicable.

ARTICLE IV GENERAL PROVISIONS

- 4.1 Agreement Subject to CAISO Tariff.** Except as provided in Section 1.2(a), this Agreement shall be subject to the CAISO Tariff, which shall be deemed to be incorporated herein.
- 4.2 No Other Relationships.** Nothing contained in this Agreement shall be construed as creating a corporation, company, partnership, association, joint venture or other entity, nor shall anything contained in this Agreement be construed as creating or requiring any fiduciary relationship between the Parties. No Party shall be responsible hereunder for the acts or omissions of the other Parties. This Agreement is for the sole and exclusive benefit of the Parties and shall not create a contractual relationship with, or cause of action in favor of, any third party.

ARTICLE V DISPUTE RESOLUTION

- 5.1 Dispute Resolution.** The Parties shall make reasonable efforts to settle all disputes arising out of or in connection with this Agreement. In the event any dispute is not settled, the Parties shall adhere to the CAISO ADR Procedures set forth in Section 13 of the CAISO Tariff, which is incorporated by reference, except that any reference in Section 13 of the CAISO Tariff to Market Participants shall be read as a reference to PNM or TEP and references to the CAISO Tariff shall be read as references to this Agreement.
- 5.2 Attachment A Conflict.** In the event any CAISO Tariff requirement or other rule or procedure conflicts with Attachment A as incorporated by Section 4.1, the more specific detail in Attachment A shall govern provided that the CAISO Tariff requirement or other rule or procedure shall apply to the extent it is not in conflict with the requirement in Attachment A. The CAISO will evaluate any identified conflict between Attachment A and a CAISO Tariff requirement or other rule or procedure and advise PNM and TEP of its determination concerning the conflict. If PNM or TEP object to the CAISO determination, the CAISO determination will nonetheless apply until the Parties accept the circumstances consistent with the CAISO determination, modify Attachment A in accordance with Section 9.8 to resolve the conflict, or pursue other action under the Agreement.

ARTICLE VI REPRESENTATIONS AND WARRANTIES

- 6.1 Representation and Warranties.** Each Party represents and warrants that the execution, delivery and performance of this Agreement by it has been duly authorized by all necessary corporate or governmental actions, to the extent authorized by law.

- 6.2 Necessary Approvals.** PNM and TEP each represent that all necessary rights, leases, approvals, permits, licenses, easements, access to operate in compliance with this Agreement have been or will be obtained prior to the effective date of this Agreement, including any arrangement with third parties.

ARTICLE VII LIABILITY

- 7.1 Liability.** The provisions of Section 14 of the CAISO Tariff will apply to liability arising under this Agreement, except that all references in Section 14 of the CAISO Tariff to Market Participants shall be read as references to PNM or TEP and references to the CAISO Tariff shall be read as references to this Agreement.

ARTICLE XIII UNCONTROLLABLE FORCES

- 8.1 Uncontrollable Forces Tariff Provisions.** Section 14.1 of the CAISO Tariff shall be incorporated by reference into this Agreement except that all references in Section 14.1 of the CAISO Tariff to Market Participants shall be read as a reference to PNM or TEP and references to the CAISO Tariff shall be read as references to this Agreement.

ARTICLE IX MISCELLANEOUS

- 9.1 Assignments.** PNM or TEP may assign or transfer any or all of its rights or obligations under this Agreement with the CAISO's prior written consent in accordance with Section 22.2 of the CAISO Tariff, and neither PNM nor TEP may assign or transfer any or all of its rights or obligations under this Agreement without such consent. Such consent shall not be unreasonably withheld. Any such transfer or assignment shall be conditioned upon the successor in interest accepting the rights or obligations under this Agreement as if said successor in interest were an original Party to this Agreement and the successor in interest negotiating an amendment or revision to this Agreement as may be required to facilitate the transfer or assignment. Any such assignment shall also take into consideration the timeline for providing adequate access and training to the CAISO systems to the assignee for continued implementation and operation of the JOU Model and JOU Pilot.
- 9.2 Notices.** Any notice, demand or request which may be given to or made upon any Party regarding this Agreement shall be made in accordance with Section 22.4 of the CAISO Tariff, provided that all references in Section 22.4 of the

CAISO Tariff to Market Participants shall be read as a reference to PNM or TEP and references to the CAISO Tariff shall be read as references to this Agreement, and unless otherwise stated or agreed shall be made to the contact for notices representative of the other Parties indicated in Attachment B. A Party must update the information in Attachment B of this Agreement as information changes. Such changes shall not constitute an amendment to this Agreement.

- 9.3 Waivers.** Any waiver at any time by either Party of its rights with respect to any default under this Agreement, or with respect to any other matter arising in connection with this Agreement, shall not constitute or be deemed a waiver with respect to any subsequent default or other matter arising in connection with this Agreement. Any delay, short of the statutory period of limitations, in asserting or enforcing any right under this Agreement shall not constitute or be deemed a waiver of such right.
- 9.4 Governing Law and Forum.** This Agreement shall be deemed to be a contract made under, and for all purposes shall be governed by and construed in accordance with, the laws of the State of California, except its conflict of law provisions. The Parties irrevocably consent that any legal action or proceeding arising under or relating to this Agreement to which the CAISO ADR Procedures do not apply shall be brought in any of the following forums, as appropriate: any court of the State of California, any federal court of the United States of America located in the State of California, or, where subject to its jurisdiction, before the Federal Energy Regulatory Commission. To the fullest extent permitted by law, each of the Parties hereto waives any right it may have to a trial by jury in respect of litigation directly or indirectly arising out of, under or in connection with this Agreement. Each Party further waives any right to consolidate, or to request the consolidation of, any action in which a jury trial has been waived with any other action in which a jury trial cannot be or has not been waived.
- 9.5 Consistency with Federal Laws and Regulations.** This Agreement shall incorporate by reference Section 22.9 of the CAISO Tariff as if the references to the CAISO Tariff were referring to this Agreement.
- 9.6 Merger.** This Agreement constitutes the complete and final agreement of the Parties with respect to the subject matter hereof and supersedes all prior agreements, whether written or oral, with respect to such subject matter.
- 9.7 Severability.** If any term, covenant, or condition of this Agreement or the application or effect of any such term, covenant, or condition is held invalid as to any person, entity, or circumstance, or is determined to be unjust, unreasonable, unlawful, imprudent, or otherwise not in the public interest by any court or government agency of competent jurisdiction, then such term, covenant, or condition shall remain in force and effect to the maximum extent

permitted by law, and all other terms, covenants, and conditions of this Agreement and their application shall not be affected thereby, but shall remain in force and effect and the Parties shall be relieved of their obligations only to the extent necessary to eliminate such regulatory or other determination unless a court or governmental agency of competent jurisdiction holds that such provisions are not separable from all other provisions of this Agreement.

- 9.8 Amendments.** This Agreement may be amended from time to time by the mutual agreement of the Parties in writing. Amendments that require FERC approval shall not take effect until FERC has accepted such amendments for filing and made them effective. Nothing contained herein shall be construed as affecting in any way the right of the CAISO to unilaterally make application to FERC for a change in the rates, terms and conditions of this Agreement under Section 205 of the FPA and pursuant to FERC's rules and regulations promulgated thereunder, including Attachment A, and PNM and TEP shall have the right to make a unilateral filing with FERC to modify this Agreement pursuant to Section 206 or any other applicable provision of the FPA and FERC's rules and regulations thereunder; provided that each Party shall have the right to protest any such filing by any other Party and to participate fully in any proceeding before FERC in which such modifications may be considered. Nothing in this Agreement shall limit the rights of the Parties or of FERC under Sections 205 or 206 of the FPA and FERC's rules and regulations thereunder, except to the extent that the Parties otherwise mutually agree as provided herein.
- 9.9 Confidentiality.** Each Party's confidential information will be treated in accordance with Section 20 of the CAISO Tariff and any other applicable data sharing agreements in effect among the Parties.
- 9.10 Counterparts.** This Agreement may be executed in one or more counterparts at different times, each of which shall be regarded as an original and all of which, taken together, shall constitute one and the same Agreement.

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be duly executed on behalf of each by and through their authorized representatives as of the date hereinabove written.

California Independent System Operator Corporation

By: _____

Name: Khaled Abdul-Rahman

Title: Vice President, Market Systems and Technology

Date: _____

Public Service Company of New Mexico

By: _____

Name: _____

Title: _____

Date: _____

Tucson Electric Power

By: _____

Name: _____

Title: _____

Date: _____

ATTACHMENT A

SCOPE OF JOU MODEL IMPLEMENTATION AND JOU PILOT

[Sections 3.1 and 3.2]

I. Introduction

The learnings from the JOU Pilot will inform a future CAISO stakeholder process to consider the availability and application of the JOU Model solution more broadly in the CAISO Markets, which may lead to an amendment of the CAISO Tariff. In the meantime, this Attachment A to the Joint Owned Unit (JOU) Pilot Agreement supplements the CAISO Tariff as incorporated by Section 4.1 of the JOU Pilot Agreement and establishes the technical requirements for the JOU Pilot.

These technical requirements supplement the CAISO Tariff requirements for EIM Resource participation, including registration, modeling, bidding and settlement. Rules, procedures and requirements otherwise applicable to EIM Resource participation and operation of CAISO Market systems, including the associated data and integration requirements, shall continue to be governed by such other CAISO rules, procedures, and requirements, as applicable. Certain parameters described or referenced in this Attachment A are standard parameters in use in various CAISO systems, and may not be explicitly defined in the CAISO Tariff. These technical requirements—

(a) Define the relationship between the JOU Parent Resource and the JOU Child Resources.

(b) Establish what the JOU Resource operators Scheduling Coordinators are required to do, or are permitted or not permitted to do, and

(c) Specify modifications of existing formulations or provide new formulations uniquely applicable to the JOU Pilot.

These technical requirements may be modified in accordance with Section 3.4 of the Agreement as may be necessary to resolve any conflict with CAISO Tariff provisions, ensure feasible outcomes from the JOU Pilot, increase the mutual benefit from the project, or account for unanticipated circumstances. Any changes to this Attachment A other than with respect to implementation details as provided in Section 3.4 of the Agreement, i.e., any change that affects the rates, terms and conditions of service, must be filed with FERC as an amendment in accordance with Section 9.8 of the Agreement.

II. JOU Model Implementation and JOU Pilot

Defined Terms and Acronyms

The following list of defined terms is in addition to any defined terms or acronyms described in the CAISO Tariff. Acronyms used throughout this Attachment A have been listed below although they may already be defined in the CAISO Business Practice

Manual for Definitions and Acronyms as posted on the CAISO website¹. Description of Master File parameters listed in this Attachment A can be found in the CAISO Business Practice Manual for Market Instruments as posted on the CAISO website².

1. JOU Resource: A Generating Unit with more than one entity receiving a share of its Energy and other attributes, where the shares are represented in different Balancing Authority Areas, either by their physical location or by pseudo-tie. It does not include shares represented in different Balancing Authority Areas via a dynamic schedule.
2. JOU Parent Resource: The modeled representation of the physical resource supporting the associated JOU Child Resources, as registered with the CAISO.
3. JOU Parent SC: Scheduling Coordinator entity representing the JOU Parent Resource.
4. JOU Child Resource: The logical models representing the shares of the JOU Parent Resource, as registered with the CAISO.
5. JOU Child SC: Scheduling Coordinator entity representing the JOU Child Resource.
6. Active JOU Child Resource: Active JOU Child Resource is a JOU Child Resource with Base Schedules or Bids in the Energy Imbalance Market for a given market interval.
7. Inactive JOU Child Resource: A JOU Child Resource without a Base Schedule or Bids in the Energy Imbalance Market for a given market interval.
8. Intermediate PMin: It is intermediate value of registered PMin calculated in accordance with Section 1.13.2 of this Attachment A.
9. LOL: Lower Operating Limit (taking into account PMin rerates)
10. Intermediate LOL: Intermediate Value of Lower Operating Limit
11. UOL: Upper Operating Limit (taking into account PMax derates)
12. LEL: Lower Economic Limit (Lower MW end of the SIBR bid)
13. UEL: Upper Economic Limit (Upper MW end of the SIBR bid)
14. DMLC: Default Minimum Load Cost
15. DSUC: Default Start Up Cost
16. DEB: Default Energy Bid
17. MLC: Minimum Load Cost
18. SUC: Start Up Cost (from bid for active children and summed up for parent)
19. Adjusted MLC: Adjusted Minimum Load Cost
20. Adjusted DMLC: Adjusted Default Minimum Load Cost
21. Adjusted SUC: Adjusted Start Up Cost
22. RIG: Remote Intelligence Gateway
23. GHG: Greenhouse Gas
24. DOT: Dispatch Operating Target
25. BAA: Balancing Authority Area
26. SUT: Start Up Time
27. MIN OFF: Minimum Off Time
28. LRL: Lower Regulation Limit
29. URL: Upper Regulation Limit

¹CAISO list of acronyms

<https://bpmcm.caiso.com/Pages/BPMDetails.aspx?BPM=Definitions%20and%20Acronyms>

² CAISO BPM for Market Instruments

<https://bpmcm.caiso.com/Pages/BPMDetails.aspx?BPM=Market%20Instruments>

JOU Model Implementation and JOU Pilot

1. JOU Resource Registration

- 1.1. A JOU Child Resource registration and logical model type must correspond to the registration and logical model type of the JOU Parent Resource, in accordance with the provisions of this Attachment A.
- 1.2. The JOU Parent SC will register the JOU Parent Resource with the CAISO in accordance with established CAISO Tariff provisions and BPM processes applicable to the registration of EIM Non-Participating Resources. The JOU Parent SC must be the EIM Entity SC of its Native BAA. The Scheduling Coordinator ID code associated with the JOU Parent Resource must not be associated with any other Resource ID, except with a Resource ID representing another JOU Parent Resource.
- 1.3. The JOU Parent SC will register the mapping between JOU Child Resources and the JOU Parent Resource, including the percentage share associated with each JOU Child Resource. Any change in such shares may require an update to the registration of the JOU Child Resource through the applicable registration processes. These shares must be established as static values with the CAISO. The sum of percentage shares of all JOU Child Resources linked to a single JOU Parent Resource must equal 100 %.
- 1.4. The JOU Child Resource(s) of a JOU Parent Resource may be located in different BAAs, when established as a pseudo-tie from the Native BAA to the Attaining BAA.
- 1.5. The JOU Child SC must register the JOU Child Resource with the CAISO in accordance with established Tariff provisions and BPM processes applicable to the registration of EIM Participating Resources or EIM Non-Participating Resources.
 - 1.5.1. A JOU Child Resource registered as an EIM Non-Participating Resource must be represented by the EIM Entity SC of the BAA it is represented in either by physical location or pseudo-tie, as its JOU Child SC
 - 1.5.2. A JOU Child Resource is registered as an EIM Participating Resource, may be represented by any certified EIM Participating Resource SC as its JOU Child SC, but cannot be represented by the EIM Entity SC associated with its JOU Parent Resource.
 - 1.5.3. Each JOU Child Resource may have a different SC compared to the other JOU Child Resources linked to its JOU Parent Resource.
- 1.6. The CAISO will map the JOU Parent Resource to a Cnode.
- 1.7. If a JOU Child Resource and the JOU Parent Resource are in the same BAA; the JOU Child Resource will be mapped to a different Cnode but linked to the Cnode of its JOU parent resource.
- 1.8. If a JOU Child Resource and the JOU Parent Resource are in different BAAs; the JOU Child Resource will be mapped to a different Cnode in the Attaining BAA but linked to the Cnode of its JOU parent resource

1.9. JOU Parent Resources and JOU Child Resources will be modeled as model type Non-MSG Generator. All other model types as listed below will not be available to JOU Parent Resources and JOU Child Resources:

- NGR (including hybrid resources)
- PDR
- COG
- Participating Load
- PSH
- Use Limited (UL)
- MSG

1.10. The JOU Parent SC and JOU Child SC may register the following Master File parameters independently for their respective resources. An example of such parameters have been provided below. The CAISO will provide the entire list of applicable Master File parameters to the Parties as part of the JOU Model and JOU Pilot implementation, which will supersede this list below.

- BAA
- SC
- RC Entity
- Resource ID
- Parent/Child Identification
- PMin
- PMax
- Fuel region
- Lower Regulation Limit (MW)
- Upper Regulation Limit (MW)
- Ramp MW Output
- Ramp Min Rate
- Ramp Max Rate
- Meter Data Interval
- CAISO Polled Flag
- BSC
- JOU Parent Mapping
- Percentage Share
- DAM Certification Flag
- RTM Certification Flag
- EIM Participation Flag
- HEAT HEAT RATE
- HEAT MW OUTPUT
- Others (as provided by the CAISO)

1.10.1. The JOU Child SC will be allowed to register the heat rate for its JOU Child Resource in Master File, under the sole condition that the new heat rate

it seeks to register has been used to establish the currently effective Negotiated Rate Option DEB.

1.11. With regards to the registration of PMin and Lower Regulation Limit for JOU Child Resources:

1.11.1. If the sum of the individual PMin or LRL of each JOU Child Resource is less than the individual PMin or LRL of the JOU Parent Resource, and the individual PMin or LRL of the JOU Parent Resource is greater than or equal to the product of the total number of JOU Child Resources multiplied times 1 MW; the JOU Child SC may register their PMin or LRL capacities at 1 MW.

1.11.2. If the sum of the individual PMin or LRL of each JOU Child Resource is equal to the individual PMin of the JOU Parent Resource, or the individual PMin or LRL of the JOU Parent Resource is less than the product of the total number of JOU children multiplied times 1 MW; the JOU Child SC may register the PMin or LRL capacities of their resources at their individual values

1.11.3. If the sum of the individual PMin or LRL values of the JOU Child Resources exceed the individual PMin or LRL value of the JOU Parent Resource, the JOU Child SC will not be allowed to register the individual PMin or LRL values of the JOU Child Resources.

1.11.4. The individual PMax and URL value of the JOU Parent Resource must equal the sum of the individual PMax and URL values of the associated JOU Child Resources.

1.12. The Master File registered ramp rate values for each JOU Child Resource will be limited a single segment extending from the PMin to the PMax. The sum of the Master File registered ramp rates of the JOU Child Resources must not exceed the Master File registered maximum ramp rate of the JOU Parent Resource.

1.13. The JOU Parent SC will register the Master File parameters for the JOU Parent Resource as applicable and the corresponding parameters for the JOU Child Resource will be derived as described in the following table. All parameters marked as "x" under the column titled "Child Match Parent" must be submitted solely for the JOU Parent Resource, and will not be considered applicable if they are submitted for the JOU Child Resource. The column titled "Special Child Derivation" identifies any derivation principles or methodologies for Master File parameters submitted at the JOU Parent Resource level. The CAISO will provide the entire list of parameters to the Parties as part of the JOU Model and JOU Pilot implementation, which will supersede the list provided below.

<u>Master File Parameter</u>	<u>Child Match Parent</u>	<u>Special Child Derivation</u>
<u>JOU Flag</u>	<u>x</u>	
<u>Fuel Type</u>	<u>x</u>	
<u>Technology Type</u>	<u>x</u>	

<u>Master File Parameter</u>	<u>Child Match Parent</u>	<u>Special Child Derivation</u>
<u>AS flags (spin, non-spin, regulation)</u>	<u>X</u>	
<u>Ramp Up/Down</u>	<u>X</u>	
<u>MDS</u>	<u>X</u>	
<u>MDT</u>	<u>X</u>	
<u>MUT</u>	<u>X</u>	
<u>SU Ramp Time</u>	<u>X</u>	
<u>LMP Eligibility Flag</u>	<u>X</u>	
<u>Heat Emission Rate</u>		<u>Null</u>
<u>Start Down Time (aka Cooling Time)</u>	<u>X</u>	
<u>SUT</u>	<u>X</u>	
<u>Default GDF</u>	<u>X</u>	
<u>DEB Options Ranking</u>	<u>X</u>	
<u>Default DEB Options Ranking</u>	<u>X</u>	
<u>GHG Emission Rate</u>	<u>X</u>	
<u>GHG Compliance Obligation Flag</u>	<u>X</u>	
<u>VOMC</u>	<u>X</u>	
<u>SUC</u>		<u>Null</u>
<u>SUE</u>		<u>Null</u>
<u>SUF</u>		<u>Null</u>
<u>HAVGC</u>		<u>Null</u>
<u>ROPR</u> (applicable to Min, Max and Market ramp rates)		<u>Null</u>
<u>RREG</u> (applicable to Min, Max and Market ramp rates)		<u>Null</u>
<u>Lower Forbidden Region MW (LFR)</u>		<u>Null</u>
<u>Upper Forbidden Region MW (UFR)</u>		<u>Null</u>

<u>Master File Parameter</u>	<u>Child Match Parent</u>	<u>Special Child Derivation</u>
<u>Forbidden Region Crossing Time (FRCT)</u>		<u>Null</u>

1.13.1. The JOU Child SC must ensure that the JOU Child Resource name will be structured in a manner to provide ease of reference to the associated JOU Parent Resource. The CAISO may reject the proposed name from the JOU Child SC if it does not create ease of reference to the JOU Parent Resource name.

2. Telemetry Requirements

2.1. The JOU Parent SC is limited to and required to submit the physical telemetry and Meter Data for the JOU Parent Resource, and the JOU Child SC is limited to and required to submit the logical telemetry and Meter Data for the JOU Child Resource.

2.2. Regarding JOU Parent Resource and JOU Child Resources that are certified for AS, the JOU Parent SC and JOU Child SC must submit direct telemetry for their respective resources using a real-time device or RIG.

3. Calculated Costs for JOU Resources

3.1. The JOU Child Resource will receive the same greenhouse gas maximum compliance cost calculated for the JOU Parent Resource.

3.2. The calculation of the Intermediate PMin of the JOU Child Resource will be as follows:

3.2.1. If the sum of the individual PMin of the JOU Child Resources equal the PMin of the JOU Parent Resource, the Intermediate PMin of the JOU Child Resource will be equal to its PMin.

3.2.2. If the sum of the individual PMin of the JOU Child Resources does not equal the PMin of the JOU Parent Resource:

3.2.2.1. The Intermediate PMin of each JOU Child Resource will be the maximum of the individual PMin and pro-rata PMin of the JOU Child Resource, where the pro-rata PMin is the product of the PMin of the JOU Parent Resource and the percentage share associated with the JOU Child Resource.

3.2.3. The calculation of the Intermediate LOL will follow the same methodology, replacing PMin with LOL in the calculations.

3.3. The manual consult price will be calculated solely for the JOU Parent Resource.

3.4. The Negotiated Rate Option is the sole DEB option available to JOU Parent Resources and JOU Child Resources. Each JOU Child SC will be responsible for establishing the Negotiated Rate Option DEB for its JOU Child Resource.

3.5. The energy price index calculated for the JOU Parent Resource will be applied to its JOU Child Resources.

3.6. The negotiated major maintenance adder of the Minimum Load Cost and Start-Up Cost established for the JOU Parent Resource will be applied to its JOU Child Resources using a pro-rata allocation based on the percentage share associated with each JOU Child Resource. The JOU Parent SC will be responsible for applying for the negotiated major maintenance adder.

4. Outage Management for JOU Resources

4.1. The JOU Parent SC will be allowed to submit and view outages solely for the JOU Parent Resource.

4.2. The JOU Parent SC may view outages applicable to its JOU Child Resources only if authorized by the applicable JOU Child SC. The JOU Child SC may delegate authority to the JOU Parent SC of its JOU Parent Resource to submit outages on its behalf.

4.3. The JOU Child SC will be allowed to submit and view outages solely for the JOU Child Resource it represents. The table below describes the categories of outages that can be submitted for the JOU Parent Resource and the JOU Child Resource. For those outages that can only be submitted for the JOU Parent Resource, the outages will be translated for application to the JOU Child Resource in the manner described below.

4.3.1. A PMin re-rate outage on JOU Parent Resource will be applied to its JOU Child Resources in accordance with calculation methodology for Intermediate LOL described in this Attachment A.

4.3.2. An out of service outage on JOU Parent Resource will set the same out of service outage status for its JOU Child Resources, including any subsequent modifications to this outage status.

4.3.3. A ramp rate de-rate outage on JOU Parent Resource will be applied to its JOU Child Resources as described in this Attachment A.

<u>Outage Category</u>	<u>Allowed to be submitted for JOU Parent Resource</u>	<u>Allowed to be submitted for JOU Child Resource</u>
<u>Out Of Service</u>	<u>X</u>	
<u>Pmin Rerate</u>	<u>X</u>	
<u>Pmax Derate</u>	<u>X</u>	<u>X</u>
<u>Ramp rate Derate</u>	<u>X</u>	

4.4. The JOU Child SC will not be allowed to view outages on the JOU Parent Resource or other associated JOU Child Resources, unless the JOU Child SC is authorized to view outages applicable to another JOU Child Resource by the responsible JOU Child SC.

4.5. This scaling factor methodology is applied when JOU Parent Resource Master File registered ramp rate is subject to de-rates. A scaling factor is calculated by utilizing the following methodology and the values applicable to the JOU Parent Resource: the de-rated highest ramp rate segment divided by the Master File registered highest ramp rate segment. The de-rates of the JOU Parent Resource Master File

- registered ramp rates will be translated to the JOU Child Resources by multiplying the JOU Child Resource's Master File registered ramp rates with the scaling factor.
- 4.6. The treatment of overlapping outages between the JOU Parent Resource and its JOU Child Resources will be treated in accordance with the outage management provisions of the CAISO Tariff applicable to EIM Resources.
- 4.7. If an out of service outage on the entire JOU Parent Resource is applied to its JOU Child Resources, the JOU Child SC will be allowed to view, but not edit, the translated outage data on its JOU Child Resource.

5. Market Participation for JOU Resources

- 5.1. The JOU Child Resource will be allowed to participate in the Energy Imbalance Market in the same manner as an EIM Participating Resource in accordance with the CAISO Tariff and this Attachment A. The JOU Child Resources of a single JOU Parent Resource will be allowed to have different Energy and Flexible Ramp Up/Down bids. The JOU Child SC will be allowed to only view the Bids it has submitted. The JOU Child SC will be allowed to view aggregated operational information related to the total schedule applicable to its JOU Parent Resource, with this functionality being available at a date later than the TEP Implementation Date.
- 5.2. The JOU Parent SC will not be allowed to submit Bids and Base Schedules, or provision Ancillary Services. The JOU Parent SC will not be allowed to view any Bids or Base Schedules it has not submitted.
- 5.2.1. The aggregated Base Schedule information applicable to the JOU Parent Resource may be viewed by its Balancing Authority Area Entity.
- 5.3. The JOU Child SC and the JOU Parent SC may not submit a revised DEB curve as part of the Variable Cost Option for establishing a DEB, with the Variable Cost option not being available for JOU Resources..
- 5.4. The Default SUC and Default MLC calculated for the JOU Parent Resource will be applied to the JOU Child Resource in a pro-rata manner using the percentage share associated with each JOU Child Resource. A JOU Child SC will only be allowed to view the calculated Default SUC and Default MLC for its JOU Child Resource, irrespective of whether it is an Active or Inactive JOU Child Resource.
- 5.5. The Reasonableness Threshold will not be calculated for the JOU Parent Resource or the JOU Child Resource.
- 5.6. The JOU Child SC may submit revised values of the Default SUC and Default MLC for an Active JOU Child Resource, and will have the sole right to access and view the submittals. The submitted revised Default SUC and Default MLC for Active JOU Child Resources will be validated by the CAISO.
- 5.7. The JOU Child SC will have the sole right to submit and view the Base Schedules for Energy and Ancillary Services for the JOU Child Resource.
- 5.8. The submitted Base Schedules on the JOU Child Resources will be deemed valid even if the aggregate of the Base Schedules is lower than the PMin of the JOU Parent Resource. The submittal and the validation of the Base Schedules will

result in the JOU Parent Resource being deemed to be in Start-Up subject to existing additional conditions defined below under Section 1.15.9.

- 5.9. The JOU Parent Resource will be recognized to be in Start-Up mode when it meets the same conditions applicable to EIM Resources. If the JOU Parent Resource is recognized to not be in Start-Up mode, it will retain its current Commitment Status. If the JOU Parent Resource retains its Commitment Status as "Off", the submitted Base Schedules are ignored. "
- 5.10. The Real-Time Base Schedule balancing test and the flexible ramp test will utilize the submitted Base Schedules of the JOU Child Resources. The flexible ramp test will utilize the Master File registered ramp rate of the JOU Child Resources, subject to adjustments due to de-rates or revisions of the Master File registered ramp rate of the JOU Parent Resource.
- 5.11. While the JOU Parent Resource is in Start-Up, no Bids for the JOU Child Resources will be utilized in RTM, and only zero MW DOTs for the JOU Child Resources will be created.
- 5.12. When a JOU Parent Resource has Inactive JOU Child Resources, the Default SUC of the Inactive JOU Child Resource will be allocated to the Active JOU Child Resources in proportion to their relative percentage shares.

*Adjusted SUC (due to Inactive JOU Child Resource) = Sum of Default SUC of all Inactive JOU Child Resources * (ratio of percentage share of Active JOU Child Resource over the sum of percentage shares of all Active JOU Child Resources.)*

The allocation of Default MLC of the Inactive JOU Child Resources will follow the above-described formula, by replacing SUC with MLC.

- 5.13. When a JOU Parent Resource has a PMin re-rate, the MLC of all Active JOU Child Resources and the Default MLC of Inactive JOU Child Resources, will be adjusted in accordance with the CAISO Tariff, considering any Intermediate PMin or Intermediate LOL created for the JOU Child Resource. Any such adjustment will have priority over any re-allocation of the Default MLC of an Inactive JOU Child Resource to the Default MLC of Active Child Resources of the same JOU Parent Resource.

5.13.1. The Adjusted MLC (for Active JOU Child Resources) and Adjusted Default MLC (for all JOU Child Resources) is equal to the sum of the MLC (for Adjusted MLC) or Default MLC (for adjusted Default MLC), and the product of the DEB and the difference between the calculated Intermediate LOL and Intermediate PMin.

*Adjusted MLC or Adjusted DMLC (due to PMin re-rate) = MLC or Default MLC * (DEB * [Intermediate LOL - Intermediate PMin])*

- 5.13.2. When a JOU Parent Resource has a PMin re-rate as well as Inactive JOU Child Resources, the Adjusted MLC is calculated as follows:

The Adjusted MLC derived under Section 1.1.15.13.1 of this Attachment A is now adjusted using the formula applied towards adjustment of MLC of Active JOU Child Resources to re-allocate the Default MLC of Inactive JOU Child Resources.

Adjusted MLC (due to Inactive JOU Child Resource) = Adjusted MLC (due to PMin re-rate) + (Adjusted DMLC of Inactive JOU Child Resource * [ratio of percentage share of Active JOU Child Resource over the sum of percentage shares of all Active JOU Child Resources])

5.14. The Adjusted MLC and Adjusted SUC of the JOU Parent Resource will be the sum of the Adjusted MLCs and Adjusted SUCs of all its Active JOU Child Resources, respectively, when such adjustments are made in accordance with Sections 1.15.12 and 1.15.13 of this Attachment A.

5.15. The JOU Child Resources will be constrained to the same Commitment Status as the JOU Parent Resource.

5.16. There will be no Commitment Costs modeled for a JOU Parent Resource during its Self-Commitment Period, when the JOU Parent Resource is in a Self-Commitment Period due to one or more of its JOU Child Resources being subject to a Self-Commitment Period.

5.17. When one JOU Child Resource submits a Self-Schedule or a Base Schedule, all Active JOU Child Resources belonging to the same JOU Parent Resource will be entered into a Self-Commitment Period.

5.17.1. The JOU Parent Resource of these JOU Child Resources will also be entered into a Self-Commitment Period.

5.18. The JOU Parent Resource will be constrained by certain physical constraints during its Commitment Period as identified below:

- PMax
- PMin
- Lower Regulation Limit
- Lower Forbidden Region
- Upper Forbidden Region
- Ramp rate
- Physical transmission constraints

The constraints enforced on the JOU Parent Resource will not be enforced on the JOU Child Resource Ramp Rates.

5.19. JOU Child Resource schedules will be constrained by various limits during its Commitment Period as identified below:

- Power balance constraint of the Native BAA or Attaining BAA
- Scheduling limits of the Native BAA or Attaining BAA
- Capacity constraints and scheduling limits of the JOU Child Resource.
- Lower Economic Limit and Upper Economic Limit of JOU Child Resource

- 5.20. For a JOU Child Resource that is registered as an EIM Participating Resource, the GHG allocation to the various GHG compliance areas will be calculated using its EIM Bid Adder.
- 5.21. JOU Child Resources will have the LMPM eligibility flag enabled automatically if their JOU Parent Resource has the LMPM eligibility flag enabled, and the Dynamic Competitive Path Assessment process will mitigate the JOU Child Resource to its DEB if applicable.
- 5.22. The calculation of the counter flow capacity will be calculated using the registered attributes of the JOU Child Resources
- 5.23. There may be restrictions imposed on EIM Manual Dispatch Instructions submitted by the Native BAA to dispatch the Start-Up or Shut-Down of a JOU Parent Resource. The Native BAA will have the sole right to submit these Start-Up or Shut-Down instructions and such instructions will be communicated to the JOU Parent SC.
- 5.24. The Attaining BAA of the JOU Child Resource will not be allowed to submit EIM Manual Dispatch Instructions affecting its Start-Up or Shut-Down, but can do so for dispatching it to a certain MW level. These instructions will be communicated to the JOU Child SC.
- 5.25. All EIM Manual Dispatch Instructions on a JOU Parent Resource will be applicable to its JOU Child Resources as well.
- 5.26. When a JOU Parent Resource is subject to EIM Manual Dispatch Instruction for Start-Up and there are no corresponding EIM Manual Dispatch Instructions on the JOU Child Resources, there will be EIM Manual Dispatch Instructions created for its JOU Child Resources to dispatch them to the appropriate MW value to support the JOU Parent Resource Commitment Period. These EIM Manual Dispatch Instructions will dispatch the Active JOU Child Resources to the PMin, if the sum of the individual PMin of the JOU Child Resources equals the PMin of the JOU Parent Resource; otherwise the Active JOU Child Resources will be dispatched to the appropriate MW level to ensure that the sum of their individual dispatched MW levels equals the PMin of the JOU Parent Resource. If the dispatch of the Active Child Resources to their maximum available MW capacity results in an aggregate MW level lower than the PMin of the JOU Parent Resource, there will be EIM Manual Dispatch Instructions created for Inactive JOU Child Resources as well, such that the aggregate MW level of dispatch considering all the JOU Child Resources equals the PMin of the JOU Parent.
- 5.26.1. If the EIM Manual Dispatch Instruction for Start-Up of the JOU Parent Resource is a verbal post-market EIM Manual Dispatch Instruction and there are no corresponding EIM Manual Dispatch Instructions on the JOU Child Resources, there will be EIM Manual Dispatch Instructions created for the JOU Child Resources to dispatch them to their Intermediate PMin.
- 5.27. When a JOU Parent Resource is subject to EIM Manual Dispatch Instruction for Shut-Down, there will be new EIM Manual Dispatch Instructions created or existing EIM Manual Dispatch Instructions modified for its Active JOU

Child Resources to dispatch them to zero (0) MW value to support the JOU Parent Resource Commitment Period.

5.27.1. If the EIM Manual Dispatch Instruction that dispatches the JOU Parent Resource to Shut-Down is a verbal post-market EIM Manual Dispatch Instruction, there will be EIM Manual Dispatch Instructions created for the JOU Child Resources to dispatch them to 0 MW. The dispatch to zero MW will only apply to Active JOU Child Resources unless all JOU Child Resources are Inactive JOU Child Resources.

5.28. If the EIM Manual Dispatch Instructions for a JOU Parent Resource or a JOU Child Resource conflict with previous EIM Manual Dispatch Instructions, or apply to an Inactive JOU Child Resource, the following actions will be taken:

5.28.1. The Native BAA and Attaining BAA will be notified of the conflict, and will individually and jointly be responsible for the resolution of such identified conflicts.

5.28.2. The JOU Parent SC and JOU Child SC will be notified of the conflict.

5.29. All EIM Manual Dispatch Instructions submitted for the JOU Child Resources will be aggregated and applied to its JOU Parent Resource, if the EIM Manual Dispatch Instructions are of the same type and can be aggregated. Such EIM Manual Dispatch Instructions will be communicated to the Native BAA and the JOU Parent SC.

5.30. The Schedules and Dispatch Instructions applicable to the JOU Child Resources will be utilized to construct appropriate Schedules and Dispatch Instructions for the JOU Parent Resource. For the JOU Parent Resource, an Energy Schedule will be derived as the sum of Energy Schedules of all of its JOU Child Resources.

5.31. There will be no calculation of Expected Energy, Expected Energy allocation, or commodity allocation, for a JOU Parent Resource.

5.32. If the Base Schedules of the JOU Child Resources associated with the same JOU Parent Resource, in aggregate, is lower than the PMin of the JOU Parent Resource, the Expected Energy of the JOU Child Resource will be calculated in accordance with the following methodology:

5.32.1. If all the Dispatch Operating Targets of the JOU Child Resources are zero, the JOU Parent Resource will be considered to be in Start-Up, and the Expected Energy for all the JOU Child Resources will be calculated in accordance with EIM Base Schedule submission deadline rules.

5.32.2. If any of the Dispatch Operating Targets of the JOU Child Resources are greater than 0.01 MW, the JOU Parent Resource is considered to be in Commitment Status type "On", and Expected Energy for all the JOU Child Resources will be calculated in accordance with the CAISO Tariff.

5.33. If the Base Schedules of the JOU Child Resources associated with the same JOU Parent Resource, in aggregate, is equal to or higher than the PMin of the JOU Parent Resource, the Expected Energy of the JOU Child Resource will be

calculated in accordance with the CAISO Tariff provisions applicable to EIM Resources.

5.34. The JOU Parent SC will only receive access to the data published for its JOU Parent Resource, while the JOU Child SC will only receive access to the data published pertaining to its JOU Child Resource.

5.35. The JOU Parent SC will only receive access to ADS Instructions associated with its JOU Parent Resource, while the JOU Child SC will only receive access to ADS instructions associated with its JOU Child Resource.

5.36. The Start-Up Time submitted as part of the Start-Up Bid for a JOU Child Resource will be rejected, if it does not precisely match the Start-Up Time registered in Master File for the corresponding JOU Child Resource.

6. Metering

6.1. The JOU Parent SC will ensure that revenue grade meters are utilized for the purposes of submitting physical Meter Data to CAISO for the JOU Parent Resource. The CAISO will not use any Meter Data submitted by the JOU Parent SC for the JOU Parent Resource, for settling any Charge Codes.

6.2. For a JOU Child Resource, its JOU Child SC will submit Meter Data in accordance with the particular JOU Child Resource's SQMD Plan. For the purposes of the SQMD Plan, the JOU Child SC will ensure metering devices are established at the respective Inter-Ties where the Energy from the JOU Child Resource is measured.

6.3. The JOU Parent SC of the JOU Parent Resource and JOU Child SCs of its JOU Child Resources will ensure that their submitted Meter data have an equal level of granularity.

6.4. All T + 52B Meter Data submitted for a JOU Parent Resource will be compared against its JOU Child Resources, and the Meter Data for both types of resources will fail validation if their difference is outside of the specified tolerance. This specified tolerance is established to account for numerical rounding errors caused by the utilization of JOU Parent Resource Meter Data for purposes of logically calculating JOU Child Resource Meter Data. The Meter Data for the JOU Child Resources that failed validation will still be used for Settlements without any modification by CAISO. A daily report, detailing the Meter Data intervals that failed validation and associated supporting information, will be generated and provided to the applicable JOU Parent SC's and JOU Child SC's. The JOU Parent SC and JOU Child SCs are responsible for correcting and re-submitting the Meter Data intervals that failed validation, and failure to do so will be addressed in accordance with CAISO Tariff provisions applicable to Meter Data submissions.

7. Settlements

7.1. All JOU Child Resources will be subject to Settlement in accordance with the CAISO Tariff provisions applicable to EIM Participating Resources and EIM non-participating resources. The JOU Parent Resource will not be subject to any Settlement, nor will there be any administrative fees or charges applicable to the JOU Parent Resource with respect to the implementation and operation of the unique Scheduling Coordinator ID code associated with the JOU Parent Resource.

7.2. As part of the Bid Cost Recovery process, commitment cost qualification calculations will be performed for the JOU Parent Resource by comparing the submitted Meter Data and effective PMin (and any LOL) of the JOU Parent Resource. All JOU Child Resources of the JOU Parent Resource will receive the outcome of this commitment cost qualification process.

For calculating the Persistent Deviation Metric and Real-Time Performance Metric, there will be a ramp rate calculated for the JOU Child Resources in the following manner: the delta of the DOTs from consecutive Settlement Intervals divided the time difference between those Settlement Intervals.

SCOPE OF JOU MODEL IMPLEMENTATION AND JOU PILOT

[Sections 3.1 and 3.2]

I. Introduction

~~The learnings from the JOU Pilot will inform a future CAISO stakeholder process to consider the availability and application of the JOU Model solution more broadly in the CAISO Markets, which may lead to an amendment of the CAISO Tariff. In the meantime, this Attachment A to the Joint Owned Unit (JOU) Pilot Agreement supplements the CAISO Tariff as incorporated by Section 4.1 of the JOU Pilot Agreement and establishes the technical requirements for the JOU Pilot.~~

~~These technical requirements supplement the CAISO Tariff requirements for EIM Resource participation, including registration, modeling, bidding and settlement. Rules, procedures and requirements otherwise applicable to EIM Resource participation and operation of CAISO Market systems, including the associated data and integration requirements, shall continue to be governed by such other CAISO rules, procedures, and requirements, as applicable. Certain parameters described or referenced in this Attachment A are standard parameters in use in various CAISO systems, and may not be explicitly defined in the CAISO Tariff. These technical requirements—~~

- ~~(a) Define the relationship between the JOU Parent Resource and the JOU Child Resources,~~
- ~~(b) Establish what the JOU Resource operators Scheduling Coordinators are required to do, or are permitted or not permitted to do, and~~
- ~~(c) Specify modifications of existing formulations or provide new formulations uniquely applicable to the JOU Pilot.~~

~~These technical requirements may be modified in accordance with Section 3.4 of the Agreement as may be necessary to resolve any conflict with CAISO Tariff provisions, ensure feasible outcomes from the JOU Pilot, increase the mutual benefit from the project, or account for unanticipated circumstances. Any changes to this Attachment A other than with respect to implementation details as provided in Section 3.4 of the~~

Agreement, i.e., any change that affects the rates, terms and conditions of service, must be filed with FERC as an amendment in accordance with Section 9.8 of the Agreement.

II. ~~JOU Model Implementation and JOU Pilot~~

Defined Terms and Acronyms

The following list of defined terms is in addition to any defined terms or acronyms described in the CAISO Tariff. Acronyms used throughout this Attachment A have been listed below although they may already be defined in the CAISO Business Practice Manual for Definitions and Acronyms as posted on the CAISO website³. Description of Master File parameters listed in this Attachment A can be found in the CAISO Business Practice Manual for Market Instruments as posted on the CAISO website⁴.

1. ~~JOU Resource: A Generating Unit with more than one entity receiving a share of its Energy and other attributes, where the shares are represented in different Balancing Authority Areas, either by their physical location or by pseudo-tie. It does not include shares represented in different Balancing Authority Areas via a dynamic schedule.~~
2. ~~JOU Parent Resource: The modeled representation of the physical resource supporting the associated JOU Child Resources, as registered with the CAISO.~~
3. ~~JOU Parent SC: Scheduling Coordinator entity representing the JOU Parent Resource.~~
4. ~~JOU Child Resource: The logical models representing the shares of the JOU Parent Resource, as registered with the CAISO.~~
5. ~~JOU Child SC: Scheduling Coordinator entity representing the JOU Child Resource.~~
6. ~~Active JOU Child Resource: Active JOU Child Resource is a JOU Child Resource with Base Schedules or Bids in the Energy Imbalance Market for a given market interval.~~
7. ~~Inactive JOU Child Resource: A JOU Child Resource without a Base Schedule or Bids in the Energy Imbalance Market for a given market interval.~~
8. ~~Intermediate PMin: It is intermediate value of registered PMin calculated in accordance with Section 3.2 of this Attachment A.~~
9. ~~LOL: Lower Operating Limit (taking into account PMin rerates)~~
10. ~~Intermediate LOL: Intermediate Value of Lower Operating Limit~~
11. ~~UOL: Upper Operating Limit (taking into account PMax derates)~~
12. ~~LEL: Lower Economic Limit (Lower MW end of the SIBR bid)~~
13. ~~UEL: Upper Economic Limit (Upper MW end of the SIBR bid)~~
14. ~~DMLC: Default Minimum Load Cost~~
15. ~~DSUC: Default Start Up Cost~~
16. ~~DEB: Default Energy Bid~~
17. ~~MLC: Minimum Load Cost~~
18. ~~SUC: Start Up Cost (from bid for active children and summed up for parent)~~
19. ~~Adjusted MLC: Adjusted Minimum Load Cost~~

³CAISO list of acronyms

<https://bpmcm.caiso.com/Pages/BPMDetails.aspx?BPM=Definitions%20and%20Acronyms>

⁴CAISO BPM for Market Instruments

<https://bpmcm.caiso.com/Pages/BPMDetails.aspx?BPM=Market%20Instruments>

- 20. Adjusted DMLC: Adjusted Default Minimum Load Cost
- 21. Adjusted SUC: Adjusted Start Up Cost
- 22. RIG: Remote Intelligence Gateway
- 23. GHG: Greenhouse Gas
- 24. DOT: Dispatch Operating Target
- 25. BAA: Balancing Authority Area
- 26. SUT: Start Up Time
- 27. MIN_OFF: Minimum Off Time
- 28. LRL: Lower Regulation Limit
- 29. URL: Upper Regulation Limit

JOU Model Implementation and JOU Pilot

1. JOU Resource Registration

- 1.1. A JOU Child Resource registration and logical model type must correspond to the registration and logical model type of the JOU Parent Resource, in accordance with the provisions of this Attachment A.
- 1.2. The JOU Parent SC will register the JOU Parent Resource with the CAISO in accordance with established CAISO Tariff provisions and BPM processes applicable to the registration of EIM Non-Participating Resources. The JOU Parent SC must be the EIM Entity SC of its Native BAA. The Scheduling Coordinator ID code associated with the JOU Parent Resource must not be associated with any other Resource ID.
- 1.3. The JOU Parent SC will register the mapping between JOU Child Resources and the JOU Parent Resource, including the percentage share associated with each JOU Child Resource. Any change in such shares may require an update to the registration of the JOU Child Resource through the applicable registration processes. These shares must be established as static values with the CAISO. The sum of percentage shares of all JOU Child Resources linked to a single JOU Parent Resource must equal 100%.
- 1.4. The JOU Child Resource(s) of a JOU Parent Resource may be located in different BAAs, when established as a pseudo-tie from the Native BAA to the Attaining BAA.
- 1.5. The JOU Child SC must register the JOU Child Resource with the CAISO in accordance with established Tariff provisions and BPM processes applicable to the registration of EIM Participating Resources or EIM Non-Participating Resources.
 - 1.5.1. A JOU Child Resource registered as an EIM Non-Participating Resource must be represented by the EIM Entity SC of the BAA it is represented in either by physical location or pseudo-tie, as its JOU Child SC
 - 1.5.2. A JOU Child Resource is registered as an EIM Participating Resource, may be represented by any certified EIM Participating Resource SC as its JOU Child SC, but cannot be represented by the EIM Entity SC associated with its JOU Parent Resource.

- ~~1.5.3. Each JOU Child Resource may have a different SC compared to the other JOU Child Resources linked to its JOU Parent Resource.~~
- ~~1.6. The CAISO will map the JOU Parent Resource to a Cnode.~~
- ~~1.7. If a JOU Child Resource and the JOU Parent Resource are in the same BAA; the JOU Child Resource will be mapped to a different Cnode but linked to the Cnode of its JOU parent resource.~~
- ~~1.8. If a JOU Child Resource and the JOU Parent Resource are in different BAAs; the JOU Child Resource will be mapped to a different Cnode in the Attaining BAA but linked to the Cnode of its JOU parent resource~~
- ~~1.9. JOU Parent Resources and JOU Child Resources will be modeled as model type Non-MSG Generator. All other model types as listed below will not be available to JOU Parent Resources and JOU Child Resources:~~
- ~~• NGR (including hybrid resources)~~
 - ~~• PDR~~
 - ~~• COG~~
 - ~~• Participating Load~~
 - ~~• PSH~~
 - ~~• Use Limited (UL)~~
 - ~~• MSG~~
- ~~1.10. The JOU Parent SC and JOU Child SC may register the following Master File parameters independently for their respective resources. An example of such parameters have been provided below. The CAISO will provide the entire list of applicable Master File parameters to the Parties as part of the JOU Model and JOU Pilot implementation, which will supersede this list below.~~
- ~~• BAA~~
 - ~~• SC~~
 - ~~• RC Entity~~
 - ~~• Resource ID~~
 - ~~• Parent/Child Identification~~
 - ~~• PMin~~
 - ~~• PMax~~
 - ~~• Fuel region~~
 - ~~• Lower Regulation Limit (MW)~~
 - ~~• Upper Regulation Limit (MW)~~
 - ~~• Ramp_MW_Output~~
 - ~~• Ramp_Min_Rate~~
 - ~~• Ramp_Max_Rate~~
 - ~~• Meter Data Interval~~
 - ~~• CAISO Polled Flag~~
 - ~~• BSC~~
 - ~~• JOU Parent Mapping~~
 - ~~• Percentage Share~~

- ~~DAM Certification Flag~~
- ~~RTM Certification Flag~~
- ~~EIM Participation Flag~~
- ~~Others (as provided by the CAISO)~~

~~1.11. With regards to the registration of PMin and Lower Regulation Limit for JOU Child Resources:~~

~~1.11.1. If the sum of the individual PMin or LRL of each JOU Child Resource is less than the individual PMin or LRL of the JOU Parent Resource, and the individual PMin or LRL of the JOU Parent Resource is greater than or equal to the product of the total number of JOU Child Resources multiplied times 1 MW; the JOU Child SC may register their PMin or LRL capacities at 1 MW.~~

~~1.11.2. If the sum of the individual PMin or LRL of each JOU Child Resource is equal to the individual PMin of the JOU Parent Resource, or the individual PMin or LRL of the JOU Parent Resource is less than the product of the total number of JOU children multiplied times 1 MW; the JOU Child SC may register the PMin or LRL capacities of their resources at their individual values~~

~~1.11.3. If the sum of the individual PMin or LRL values of the JOU Child Resources exceed the individual PMin or LRL value of the JOU Parent Resource, the JOU Child SC will not be allowed to register the individual PMin or LRL values of the JOU Child Resources.~~

~~1.11.4. The individual PMax and URL value of the JOU Parent Resource must equal the sum of the individual PMax and URL values of the associated JOU Child Resources.~~

~~1.12. The Master File registered ramp rate values for each JOU Child Resource will be limited a single segment extending from the PMin to the PMax. The sum of the Master File registered ramp rates of the JOU Child Resources must not exceed the Master File registered maximum ramp rate of the JOU Parent Resource.~~

~~1.13. The JOU Parent SC will register the Master File parameters for the JOU Parent Resource as applicable and the corresponding parameters for the JOU Child Resource will be derived as described in the following table. All parameters marked as “x” under the column titled “Child Match Parent” must be submitted solely for the JOU Parent Resource, and will not be considered applicable if they are submitted for the JOU Child Resource. The column titled “Special Child Derivation” identifies any derivation principles or methodologies for Master File parameters submitted at the JOU Parent Resource level. The CAISO will provide the entire list of parameters to the Parties as part of the JOU Model and JOU Pilot implementation, which will supersede the list provided below.~~

Master File Parameter	Child Match Parent	Special Child Derivation
JOU Flag	x	
Fuel Type	x	

Master File Parameter	Child Match Parent	Special-Child Derivation
Technology Type	×	
AS flags (spin, non-spin, regulation)	×	
Ramp Up/Down	×	
MDS	×	
MDT	×	
MUT	×	
SU Ramp Time	×	
LMP Eligibility Flag	×	
Heat Emission Rate	×	
Start Down Time (aka Cooling Time)	×	
SUT	×	
Default GDF	×	
DEB Options Ranking	×	
Default DEB Options Ranking	×	
GHG Emission Rate	×	
GHG Compliance Obligation Flag	×	
VOMC	×	
SUC		Null
SUE		Null
SUF		Null
HR MW		Null
HR		Null
HAVGC		Null
ROPR		Null
RREG		Null
Lower Forbidden Region MW (LFR)		Null
Upper Forbidden Region MW (UFR)		Null
Forbidden Region Crossing Time (FRCT)	×	

~~1.13.1. The JOU Child SC must ensure that the JOU Child Resource name will be structured in a manner to provide ease of reference to the associated JOU Parent Resource. The CAISO may reject the proposed name from the JOU Child SC if it does not create ease of reference to the JOU Parent Resource name.~~

~~2. Telemetry Requirements~~

~~2.1. The JOU Parent SC is limited to and required to submit the physical telemetry and Meter Data for the JOU Parent Resource, and the JOU Child SC is limited to and required to submit the logical telemetry and Meter Data for the JOU Child Resource.~~

~~2.2. Regarding JOU Parent Resource and JOU Child Resources that are certified for AS, the JOU Parent SC and JOU Child SC must submit direct telemetry for their respective resources using a real-time device or RIG.~~

~~3. Calculated Costs for JOU Resources~~

~~3.1. The JOU Child Resource will receive the same greenhouse gas maximum compliance cost calculated for the JOU Parent Resource.~~

~~3.2. The calculation of the Intermediate PMin of the JOU Child Resource will be as follows:~~

~~3.2.1. If the sum of the individual PMin of the JOU Child Resources equal the PMin of the JOU Parent Resource, the Intermediate PMin of the JOU Child Resource will be equal to its PMin.~~

~~3.2.2. If the sum of the individual PMin of the JOU Child Resources does not equal the PMin of the JOU Parent Resource:~~

~~3.2.2.1. The Intermediate PMin of each JOU Child Resource will be the maximum of the individual PMin and pro-rata PMin of the JOU Child Resource, where the pro-rata PMin is the product of the PMin of the JOU Parent Resource and the percentage share associated with the JOU Child Resource.~~

~~3.2.3. The calculation of the Intermediate LOL will follow the same methodology, replacing PMin with LOL in the calculations.~~

~~3.3. The manual consult price will be calculated solely for the JOU Parent Resource.~~

~~3.4. The Negotiated Rate Option is the sole DEB option available to JOU Parent Resources and JOU Child Resources. Each JOU Child SC will be responsible for establishing the Negotiated Rate Option DEB for its JOU Child Resource.~~

~~3.5. The energy price index calculated for the JOU Parent Resource will be applied to its JOU Child Resources.~~

~~3.6. The major maintenance adder component and negotiated major maintenance adder of the Minimum Load Cost and Start-Up Cost calculated for the JOU Parent Resource will be applied to its JOU Child Resources using a pro-rata allocation based on the percentage share associated with each JOU Child Resource. The~~

JOU Parent SC will be responsible for applying for the negotiated major maintenance adder.

4. ~~Outage Management for JOU Resources~~

4.1. ~~The JOU Parent SC will be allowed to submit and view outages solely for the JOU Parent Resource.~~

4.2. ~~The JOU Parent SC may view outages applicable to its JOU Child Resources only if authorized by the applicable JOU Child SC. The JOU Child SC may delegate authority to the JOU Parent SC of its JOU Parent Resource to submit outages on its behalf.~~

4.3. ~~The JOU Child SC will be allowed to submit and view outages solely for the JOU Child Resource it represents. The table below describes the categories of outages that can be submitted for the JOU Parent Resource and the JOU Child Resource. For those outages that can only be submitted for the JOU Parent Resource, the outages will be translated for application to the JOU Child Resource in the manner described below.~~

4.3.1. ~~A Pmin re-rate outage on JOU Parent Resource will be applied to its JOU Child Resources in accordance with calculation methodology for Intermediate LOL described in this Attachment A.~~

4.3.2. ~~An out of service outage on JOU Parent Resource will set the same out of service outage status for its JOU Child Resources, including any subsequent modifications to this outage status.~~

4.3.3. ~~A ramp rate de-rate outage on JOU Parent Resource will be applied to its JOU Child Resources as described in this Attachment A.~~

Outage Category	Allowed to be submitted for JOU Parent Resource	Allowed to be submitted for JOU Child Resource
Out Of Service	x	
Pmin Rerate	x	
Pmax Derate	x	x
Ramp rate Derate	x	

4.4. ~~The JOU Child SC will not be allowed to view outages on the JOU Parent Resource or other associated JOU Child Resources, unless the JOU Child SC is authorized to view outages applicable to another JOU Child Resource by the responsible JOU Child SC.~~

4.5. ~~This scaling factor methodology is applied when JOU Parent Resource Master File registered ramp rate is subject to de-rates. A scaling factor is calculated by utilizing the following methodology and the values applicable to the JOU Parent Resource: the de-rated highest ramp rate segment divided by the Master File registered highest ramp rate segment. The de-rates of the JOU Parent Resource Master File registered ramp rates will be translated to the JOU Child Resources by multiplying the JOU Child Resource's Master File registered ramp rates with the scaling factor.~~

~~4.6. The treatment of overlapping outages between the JOU Parent Resource and its JOU Child Resources will be treated in accordance with the outage management provisions of the CAISO Tariff applicable to EIM Resources.~~

~~4.7. If an out of service outage on the entire JOU Parent Resource is applied to its JOU Child Resources, the JOU Child SC will be allowed to view, but not edit, the translated outage data on its JOU Child Resource.~~

~~5. Market Participation for JOU Resources~~

~~5.1. The JOU Child Resource will be allowed to participate in the Energy Imbalance Market in the same manner as an EIM Participating Resource in accordance with the CAISO Tariff and this Attachment A. The JOU Child Resources of a single JOU Parent Resource will be allowed to have different Energy and Flexible Ramp Up/Down bids. The JOU Child SC will be allowed to only view the bids it has submitted~~

~~5.2. The JOU Parent SC will not be allowed to submit Bids and Base Schedules, or provision Ancillary Services. The JOU Parent SC will not be allowed to view any Bids or Base Schedules it has not submitted.~~

~~5.3. Only the JOU Child SC may submit a revised DEB curve, and will only be allowed to review the revised DEB curves it has submitted.~~

~~5.4. The Default SUC and Default MLC calculated for the JOU Parent Resource will be applied to the JOU Child Resource in a pro-rata manner using the percentage share associated with each JOU Child Resource. A JOU Child SC will only be allowed to view the calculated Default SUC and Default MLC for its JOU Child Resource, irrespective of whether it is an Active or Inactive JOU Child Resource.~~

~~5.5. The Reasonableness Threshold for SUC and MLC calculated for the JOU Parent Resource will be applied to the JOU Child Resource in a pro-rata manner using the percentage share of the individual JOU Child Resource.~~

~~5.6. The JOU Child SC may submit revised values of the Default SUC and Default MLC for an Active JOU Child Resource, and will have the sole right to access and view the submittals. The submitted revised Default SUC and Default MLC for Active JOU Child Resources will be validated by the CAISO.~~

~~5.7. The JOU Child SC will have the sole right to submit and view the Base Schedules for Energy and Ancillary Services for the JOU Child Resource.~~

~~5.8. The submitted Base Schedules on the JOU Child Resources will be deemed valid even if the aggregate of the Base Schedules is lower than the PMin of the JOU Parent Resource. The submittal and the validation of the Base Schedules will result in the JOU Parent Resource being deemed to be in Start Up subject to existing additional conditions defined below under Section 5.9.~~

~~5.9. The JOU Parent Resource will be transitioned to Start Up mode when the following conditions are all met: a) submitted Base Schedules on the JOU Child Resources, in aggregate, is lower than the PMin of the JOU Parent Resource, and b) the JOU Parent Resource has its Commitment Status as "Off", and c) the JOU Parent meets its MIN_OFF time requirement. If the above condition under c) is not satisfied, the submitted Base Schedules are ignored and the JOU Parent Resource~~

~~retains its Commitment Status as “Off”. Moreover, the following steps will be taken :~~

~~5.9.1. The Real-Time Base Schedule balancing test and the flexible ramp test will utilize the submitted Base Schedules of the JOU Child Resources. The flexible ramp test will utilize the Master File registered ramp rate of the JOU Child Resources, subject to adjustments due to de-rates or revisions of the Master File registered ramp rate of the JOU Parent Resource.~~

~~5.10. While the JOU Parent Resource is in Start-Up, no Bids for the JOU Child Resources will be utilized in RTM or published as part of the final Bid set by the applicable CAISO web-services, and only zero MW DOTs for the JOU Child Resources will be created.~~

~~5.11. When a JOU Parent Resource has Inactive JOU Child Resources, the Default SUC of the Inactive JOU Child Resource will be allocated to the Active JOU Child Resources in proportion to their relative percentage shares.~~

~~*Adjusted SUC (due to Inactive JOU Child Resource) = Sum of Default SUC of all Inactive JOU Child Resources * (ratio of percentage share of Active JOU Child Resource over the sum of percentage shares of all Active JOU Child Resources.)*~~

~~The allocation of Default MLC of the Inactive JOU Child Resources will follow the above-described formula, by replacing SUC with MLC.~~

~~5.12. When a JOU Parent Resource has a PMin re-rate, the MLC of all Active JOU Child Resources and the Default MLC of Inactive JOU Child Resources, will be adjusted in accordance with the CAISO Tariff, considering any Intermediate PMin or Intermediate LOL created for the JOU Child Resource. Any such adjustment will have priority over any re-allocation of the Default MLC of an Inactive JOU Child Resource to the Default MLC of Active Child Resources of the same JOU Parent Resource.~~

~~5.12.1. The Adjusted MLC (for Active JOU Child Resources) and Adjusted Default MLC (for all JOU Child Resources) is equal to the sum of the MLC (for Adjusted MLC) or Default MLC (for adjusted Default MLC), and the product of the DEB and the difference between the calculated Intermediate LOL and Intermediate PMin.~~

~~*Adjusted MLC or Adjusted DMLC (due to PMin re-rate) = MLC or Default MLC * (DEB * [Intermediate LOL - Intermediate PMin])*~~

~~5.12.2. When a JOU Parent Resource has a PMin re-rate as well as Inactive JOU Child Resources, the Adjusted MLC is calculated as follows:~~

~~*The Adjusted MLC derived under Section 5.15.1 of this Attachment A is now adjusted using the formula applied towards adjustment of MLC of Active JOU Child Resources to re-allocate the Default MLC of Inactive JOU Child Resources.*~~

~~*Adjusted MLC (due to Inactive JOU Child Resource) = Adjusted MLC (due to PMin re-rate) + (Adjusted DMLC of Inactive JOU Child Resource * [ratio of*~~

~~percentage share of Active JOU Child Resource over the sum of percentage shares of all Active JOU Child Resources])~~

~~5.13. The Adjusted MLC and Adjusted SUC of the JOU Parent Resource will be the sum of the Adjusted MLCs and Adjusted SUCs of all its Active JOU Child Resources, respectively, when such adjustments are made in accordance with Sections 5.11 and 5.12 of this Attachment A.~~

~~5.14. The JOU Child Resources will be constrained to the same Commitment Status as the JOU Parent Resource.~~

~~5.15. There will be no Commitment Costs modeled for a JOU Parent Resource during its Self-Commitment Period, when the JOU Parent Resource is in a Self-Commitment Period due to one or more of its JOU Child Resources being subject to a Self-Commitment Period.~~

~~5.16. When one JOU Child Resource submits a Self-Schedule or a Base Schedule, all Active JOU Child Resources belonging to the same JOU Parent Resource will be entered into a Self-Commitment Period with Self-Schedules or Base Schedules to at least their PMin. The JOU Parent Resource of these JOU Child Resources will also be entered into a Self-Commitment Period.~~

~~5.17. The JOU Parent Resource will be constrained by certain physical constraints during its Commitment Period as identified below:~~

- ~~• PMin~~
- ~~• Lower Regulation Limit~~
- ~~• Lower Forbidden Region~~
- ~~• Upper Forbidden Region~~
- ~~• Ramp rate~~
- ~~• Physical transmission constraints~~

~~The constraints enforced on the JOU Parent Resource will not be enforced on the JOU Child Resource Ramp Rates.~~

~~5.18. JOU Child Resource schedules will be constrained by various limits during its Commitment Period as identified below:~~

- ~~• Power balance constraint of the Native BAA or Attaining BAA~~
- ~~• Scheduling limits of the Native BAA or Attaining BAA~~
- ~~• Capacity constraints and scheduling limits of the JOU Child Resource.~~
- ~~• Lower Economic Limit and Upper Economic Limit of JOU Child Resource~~

~~5.19. For a JOU Child Resource that is registered as an EIM Participating Resource, the GHG allocation to the various GHG compliance areas will be calculated using its EIM Bid Adder.~~

~~5.20. JOU Child Resources will have the LMPM eligibility flag enabled automatically if their JOU Parent Resource has the LMPM eligibility flag enabled, and the Dynamic Competitive Path Assessment process will mitigate the JOU Child Resource to its DEB if applicable.~~

- ~~5.21. The calculation of the counter flow capacity will be calculated using the registered attributes of the JOU Child Resources~~
- ~~5.22. There may be restrictions imposed on EIM Manual Dispatch Instructions submitted by the Native BAA to dispatch the Start-Up or Shut-Down of a JOU Parent Resource. The Native BAA will have the sole right to submit these Start-Up or Shut-Down instructions and such instructions will be communicated to the JOU Parent SC.~~
- ~~5.23. The Attaining BAA of the JOU Child Resource will not be allowed to submit EIM Manual Dispatch Instructions affecting its Start-Up or Shut-Down, but can do so for dispatching it to a certain MW level. These instructions will be communicated to the JOU Child SC.~~
- ~~5.24. All EIM Manual Dispatch Instructions on a JOU Parent Resource will be applicable to its JOU Child Resources as well.~~
- ~~5.25. When a JOU Parent Resource is subject to EIM Manual Dispatch Instruction for Start-Up and there are no corresponding EIM Manual Dispatch Instructions on the JOU Child Resources, there will be EIM Manual Dispatch Instructions created for its JOU Child Resources to dispatch them to the appropriate MW value to support the JOU Parent Resource Commitment Period. These EIM Manual Dispatch Instructions will dispatch the Active JOU Child Resources to the PMin, if the sum of the individual PMin of the JOU Child Resources equals the PMin of the JOU Parent Resource; otherwise the Active JOU Child Resources will be dispatched to the appropriate MW level to ensure that the sum of their individual dispatched MW levels equals the PMin of the JOU Parent Resource.~~
- ~~5.25.1. ——— If the EIM Manual Dispatch Instruction for Start-Up of the JOU Parent Resource is a verbal post-market EIM Manual Dispatch Instruction and there are no corresponding EIM Manual Dispatch Instructions on the JOU Child Resources, there will be EIM Manual Dispatch Instructions created for the JOU Child Resources to dispatch them to their Intermediate PMin. The dispatch to Intermediate PMin will only apply to Active JOU Child Resources unless all JOU Child Resources are Inactive JOU Child Resources.~~
- ~~5.26. ——— When a JOU Parent Resource is subject to EIM Manual Dispatch Instruction for Shut-Down, there will be EIM Manual Dispatch Instructions created for its Active JOU Child Resources to dispatch them to zero (0) MW value to support the JOU Parent Resource Commitment Period.~~
- ~~5.26.1. ——— If the EIM Manual Dispatch Instruction that dispatches the JOU Parent Resource to Shut-Down is a verbal post-market EIM Manual Dispatch Instruction, there will be EIM Manual Dispatch Instructions created for the JOU Child Resources to dispatch them to 0 MW. The dispatch to zero MW will only apply to Active JOU Child Resources unless all JOU Child Resources are Inactive JOU Child Resources.~~
- ~~5.26.2. ———~~

- ~~5.27. If the EIM Manual Dispatch Instructions for a JOU Parent Resource or a JOU Child Resource conflict with previous EIM Manual Dispatch Instructions, or apply to an Inactive JOU Child Resource, the following actions will be taken:~~
- ~~5.27.1. The Native BAA and Attaining BAA will be notified of the conflict, and will individually and jointly be responsible for the resolution of such identified conflicts,~~
- ~~5.27.2. The JOU Parent SC and JOU Child SC will be notified of the conflict.~~
- ~~5.28. All EIM Manual Dispatch Instructions submitted for the JOU Child Resources will be aggregated and applied to its JOU Parent Resource, if the EIM Manual Dispatch Instructions are of the same type and can be aggregated. Such EIM Manual Dispatch Instructions will be communicated to the Native BAA and the JOU Parent SC.~~
- ~~5.29. The Schedules and Dispatch Instructions applicable to the JOU Child Resources will be utilized to construct appropriate Schedules and Dispatch Instructions for the JOU Parent Resource. For the JOU Parent Resource, an Energy Schedule will be derived as the sum of Energy Schedules of all of its JOU Child Resources.~~
- ~~5.30. There will be no calculation of Expected Energy, Expected Energy allocation, or commodity allocation, for a JOU Parent Resource.~~
- ~~5.31. If the Base Schedules of the JOU Child Resources associated with the same JOU Parent Resource, in aggregate, is lower than the PMin of the JOU Parent Resource, the Expected Energy of the JOU Child Resource will be calculated in accordance with the following methodology:~~
- ~~5.31.1. If all the Dispatch Operating Targets of the JOU Child Resources are zero, the JOU Parent Resource will be considered to be in Start-Up, and the Expected Energy for all the JOU Child Resources will be calculated in accordance with EIM Base Schedule submission deadline rules.~~
- ~~5.31.2. If any of the Dispatch Operating Targets of the JOU Child Resources are greater than 0.01 MW, the JOU Parent Resource is considered to be in Commitment Status type "On", and Expected Energy for all the JOU Child Resources will be calculated in accordance with the CAISO Tariff.~~
- ~~5.32. If the Base Schedules of the JOU Child Resources associated with the same JOU Parent Resource, in aggregate, is equal to or higher than the PMin of the JOU Parent Resource, the Expected Energy of the JOU Child Resource will be calculated in accordance with the CAISO Tariff provisions applicable to EIM Resources.~~
- ~~5.33. The JOU Parent SC will only receive access to the data published for its JOU Parent Resource, while the JOU Child SC will only receive access to the data published pertaining to its JOU Child Resource.~~
- ~~5.34. The JOU Parent SC will only receive access to ADS Instructions associated with its JOU Parent Resource, while the JOU Child SC will only receive access to ADS instructions associated with its JOU Child Resource.~~

6. Metering

- ~~6.1. The JOU Parent SC will ensure that revenue grade meters are utilized for the purposes of submitting physical Meter Data to CAISO for the JOU Parent Resource. The CAISO will not use any Meter Data submitted by the JOU Parent SC for the JOU Parent Resource, for settling any Charge Codes.~~
- ~~6.2. For a JOU Child Resource, its JOU Child SC will submit Meter Data in accordance with the particular JOU Child Resource's SQMD Plan. For the purposes of the SQMD Plan, the JOU Child SC will ensure metering devices are established at the respective Inter-Ties where the Energy from the JOU Child Resource is measured.~~
- ~~6.3. The JOU Parent SC of the JOU Parent Resource and JOU Child SCs of its JOU Child Resources will ensure that their submitted Meter data have an equal level of granularity.~~
- ~~6.4. All T + 52B Meter Data submitted for a JOU Parent Resource will be compared against its JOU Child Resources, and the Meter Data for both types of resources will fail validation if their difference is outside of the specified tolerance. This specified tolerance is established to account for numerical rounding errors caused by the utilization of JOU Parent Resource Meter Data for purposes of logically calculating JOU Child Resource Meter Data. The Meter Data for the JOU Child Resources that failed validation will still be used for Settlements without any modification by CAISO. A daily report, detailing the Meter Data intervals that failed validation and associated supporting information, will be generated and provided to the applicable JOU Parent SC's and JOU Child SC's. The JOU Parent SC and JOU Child SCs are responsible for correcting and re-submitting the Meter Data intervals that failed validation, and failure to do so will be addressed in accordance with CAISO Tariff provisions applicable to Meter Data submissions.~~

7. Settlements

- ~~7.1. All JOU Child Resources will be subject to Settlement in accordance with the CAISO Tariff provisions applicable to EIM Participating Resources and EIM non-participating resources. The JOU Parent Resource will not be subject to any Settlement, nor will there be any administrative fees or charges applicable to the JOU Parent Resource with respect to the implementation and operation of the unique Scheduling Coordinator ID code associated with the JOU Parent Resource.~~
- ~~7.2. As part of the Bid Cost Recovery process, commitment cost qualification calculations will be performed for the JOU Parent Resource by comparing the submitted Meter Data and effective PMin (and any LOL) of the JOU Parent Resource. All JOU Child Resources of the JOU Parent Resource will receive the outcome of this commitment cost qualification process.~~
- ~~7.3. For calculating the Persistent Deviation Metric and Real-Time Performance Metric, there will be a ramp rate calculated for the JOU Child Resources in the following manner: the delta of the DOTs from consecutive Settlement Intervals divided the time difference between those Settlement Intervals.~~

ATTACHMENT B**NOTICES****[Sections 9.2]****PNM**

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**Attachment 4 – Informational Comparison of Attachment A as revised by the
Amendment with the currently effective version of Attachment A**

Amendment No. 1 to Joint Owned Unit Pilot Agreement

California Independent Systems Operator Corporation

March 18, 2022

ATTACHMENT A

SCOPE OF JOU MODEL IMPLEMENTATION AND JOU PILOT

[Sections 3.1 and 3.2]

I. Introduction

The learnings from the JOU Pilot will inform a future CAISO stakeholder process to consider the availability and application of the JOU Model solution more broadly in the CAISO Markets, which may lead to an amendment of the CAISO Tariff. In the meantime, this Attachment A to the Joint Owned Unit (JOU) Pilot Agreement supplements the CAISO Tariff as incorporated by Section 4.1 of the JOU Pilot Agreement and establishes the technical requirements for the JOU Pilot.

These technical requirements supplement the CAISO Tariff requirements for EIM Resource participation, including registration, modeling, bidding and settlement. Rules, procedures and requirements otherwise applicable to EIM Resource participation and operation of CAISO Market systems, including the associated data and integration requirements, shall continue to be governed by such other CAISO rules, procedures, and requirements, as applicable. Certain parameters described or referenced in this Attachment A are standard parameters in use in various CAISO systems, and may not be explicitly defined in the CAISO Tariff. These technical requirements—

- (a) Define the relationship between the JOU Parent Resource and the JOU Child Resources,
- (b) Establish what the JOU Resource operators Scheduling Coordinators are required to do, or are permitted or not permitted to do, and
- (c) Specify modifications of existing formulations or provide new formulations uniquely applicable to the JOU Pilot.

These technical requirements may be modified in accordance with Section 3.4 of the Agreement as may be necessary to resolve any conflict with CAISO Tariff provisions, ensure feasible outcomes from the JOU Pilot, increase the mutual benefit from the project, or account for unanticipated circumstances. Any changes to this Attachment A other than with respect to implementation details as provided in Section 3.4 of the Agreement, i.e., any change that affects the rates, terms and conditions of service, must be filed with FERC as an amendment in accordance with Section 9.8 of the Agreement.

II. JOU Model Implementation and JOU Pilot

Defined Terms and Acronyms

The following list of defined terms is in addition to any defined terms or acronyms described in the CAISO Tariff. Acronyms used throughout this Attachment A have been listed below although they may already be defined in the CAISO Business Practice

Manual for Definitions and Acronyms as posted on the CAISO website¹. Description of Master File parameters listed in this Attachment A can be found in the CAISO Business Practice Manual for Market Instruments as posted on the CAISO website².

1. JOU Resource: A Generating Unit with more than one entity receiving a share of its Energy and other attributes, where the shares are represented in different Balancing Authority Areas, either by their physical location or by pseudo-tie. It does not include shares represented in different Balancing Authority Areas via a dynamic schedule.
2. JOU Parent Resource: The modeled representation of the physical resource supporting the associated JOU Child Resources, as registered with the CAISO.
3. JOU Parent SC: Scheduling Coordinator entity representing the JOU Parent Resource.
4. JOU Child Resource: The logical models representing the shares of the JOU Parent Resource, as registered with the CAISO.
5. JOU Child SC: Scheduling Coordinator entity representing the JOU Child Resource.
6. Active JOU Child Resource: Active JOU Child Resource is a JOU Child Resource with Base Schedules or Bids in the Energy Imbalance Market for a given market interval.
7. Inactive JOU Child Resource: A JOU Child Resource without a Base Schedule or Bids in the Energy Imbalance Market for a given market interval.
8. Intermediate PMin: It is intermediate value of registered PMin calculated in accordance with Section 3.2 of this Attachment A.
9. LOL: Lower Operating Limit (taking into account PMin rerates)
10. Intermediate LOL: Intermediate Value of Lower Operating Limit
11. UOL: Upper Operating Limit (taking into account PMax derates)
12. LEL: Lower Economic Limit (Lower MW end of the SIBR bid)
13. UEL: Upper Economic Limit (Upper MW end of the SIBR bid)
14. DMLC: Default Minimum Load Cost
15. DSUC: Default Start Up Cost
16. DEB: Default Energy Bid
17. MLC: Minimum Load Cost
18. SUC——: Start Up Cost (from bid for active children and summed up for parent)
19. Adjusted MLC: Adjusted Minimum Load Cost
20. Adjusted DMLC: Adjusted Default Minimum Load Cost
21. Adjusted SUC: Adjusted Start Up Cost
22. RIG: Remote Intelligence Gateway
23. GHG: Greenhouse Gas
24. DOT: Dispatch Operating Target
25. BAA: Balancing Authority Area
26. SUT: Start Up Time
27. MIN_OFF: Minimum Off Time

¹CAISO list of acronyms

<https://bpmcm.caiso.com/Pages/BPMDetails.aspx?BPM=Definitions%20and%20Acronyms>

² CAISO BPM for Market Instruments

<https://bpmcm.caiso.com/Pages/BPMDetails.aspx?BPM=Market%20Instruments>

28. LRL: Lower Regulation Limit

29. URL: Upper Regulation Limit

JOU Model Implementation and JOU Pilot

1. JOU Resource Registration

- 1.1. A JOU Child Resource registration and logical model type must correspond to the registration and logical model type of the JOU Parent Resource, in accordance with the provisions of this Attachment A.
- 1.2. The JOU Parent SC will register the JOU Parent Resource with the CAISO in accordance with established CAISO Tariff provisions and BPM processes applicable to the registration of EIM Non-Participating Resources. The JOU Parent SC must be the EIM Entity SC of its Native BAA. The Scheduling Coordinator ID code associated with the JOU Parent Resource must not be associated with any other Resource ID-, except with a Resource ID representing another JOU Parent Resource.
- 1.3. The JOU Parent SC will register the mapping between JOU Child Resources and the JOU Parent Resource, including the percentage share associated with each JOU Child Resource. Any change in such shares may require an update to the registration of the JOU Child Resource through the applicable registration processes. These shares must be established as static values with the CAISO. The sum of percentage shares of all JOU Child Resources linked to a single JOU Parent Resource must equal 100 %.
- 1.4. The JOU Child Resource(s) of a JOU Parent Resource may be located in different BAAs, when established as a pseudo-tie from the Native BAA to the Attaining BAA.
- 1.5. The JOU Child SC must register the JOU Child Resource with the CAISO in accordance with established Tariff provisions and BPM processes applicable to the registration of EIM Participating Resources or EIM Non-Participating Resources.
 - 1.5.1. A JOU Child Resource registered as an EIM Non-Participating Resource must be represented by the EIM Entity SC of the BAA it is represented in either by physical location or pseudo-tie, as its JOU Child SC
 - 1.5.2. A JOU Child Resource is registered as an EIM Participating Resource, may be represented by any certified EIM Participating Resource SC as its JOU Child SC, but cannot be represented by the EIM Entity SC associated with its JOU Parent Resource.
 - 1.5.3. Each JOU Child Resource may have a different SC compared to the other JOU Child Resources linked to its JOU Parent Resource.
- 1.6. The CAISO will map the JOU Parent Resource to a Cnode.
- 1.7. If a JOU Child Resource and the JOU Parent Resource are in the same BAA; the JOU Child Resource will be mapped to a different Cnode but linked to the Cnode of its JOU parent resource.

- 1.8. If a JOU Child Resource and the JOU Parent Resource are in different BAAs; the JOU Child Resource will be mapped to a different Cnode in the Attaining BAA but linked to the Cnode of its JOU parent resource
- 1.9. JOU Parent Resources and JOU Child Resources will be modeled as model type Non-MSG Generator. All other model types as listed below will not be available to JOU Parent Resources and JOU Child Resources:
- NGR (including hybrid resources)
 - PDR
 - COG
 - Participating Load
 - PSH
 - Use Limited (UL)
 - MSG
- 1.10. The JOU Parent SC and JOU Child SC may register the following Master File parameters independently for their respective resources. An example of such parameters have been provided below. The CAISO will provide the entire list of applicable Master File parameters to the Parties as part of the JOU Model and JOU Pilot implementation, which will supersede this list below.
- BAA
 - SC
 - RC Entity
 - Resource ID
 - Parent/Child Identification
 - PMin
 - PMax
 - Fuel region
 - Lower Regulation Limit (MW)
 - Upper Regulation Limit (MW)
 - Ramp_MW_Output
 - Ramp_Min_Rate
 - Ramp_Max_Rate
 - Meter Data Interval
 - CAISO Polled Flag
 - BSC
 - JOU Parent Mapping
 - Percentage Share
 - DAM Certification Flag
 - RTM Certification Flag
 - EIM Participation Flag
 - HEAT HEAT RATE
 - HEAT MW OUTPUT

- Others (as provided by the CAISO)

1.10.1. The JOU Child SC will be allowed to register the heat rate for its JOU Child Resource in Master File, under the sole condition that the new heat rate it seeks to register has been used to establish the currently effective Negotiated Rate Option DEB.

1.11. With regards to the registration of PMin and Lower Regulation Limit for JOU Child Resources:

1.11.1. If the sum of the individual PMin or LRL of each JOU Child Resource is less than the individual PMin or LRL of the JOU Parent Resource, and the individual PMin or LRL of the JOU Parent Resource is greater than or equal to the product of the total number of JOU Child Resources multiplied times 1 MW; the JOU Child SC may register their PMin or LRL capacities at 1 MW.

1.11.2. If the sum of the individual PMin or LRL of each JOU Child Resource is equal to the individual PMin of the JOU Parent Resource, or the individual PMin or LRL of the JOU Parent Resource is less than the product of the total number of JOU children multiplied times 1 MW; the JOU Child SC may register the PMin or LRL capacities of their resources at their individual values

1.11.3. If the sum of the individual PMin or LRL values of the JOU Child Resources exceed the individual PMin or LRL value of the JOU Parent Resource, the JOU Child SC will not be allowed to register the individual PMin or LRL values of the JOU Child Resources.

1.11.4. The individual PMax and URL value of the JOU Parent Resource must equal the sum of the individual PMax and URL values of the associated JOU Child Resources.

1.12. The Master File registered ramp rate values for each JOU Child Resource will be limited a single segment extending from the PMin to the PMax. The sum of the Master File registered ramp rates of the JOU Child Resources must not exceed the Master File registered maximum ramp rate of the JOU Parent Resource.

1.13. The JOU Parent SC will register the Master File parameters for the JOU Parent Resource as applicable and the corresponding parameters for the JOU Child Resource will be derived as described in the following table. All parameters marked as “x” under the column titled “Child Match Parent” must be submitted solely for the JOU Parent Resource, and will not be considered applicable if they are submitted for the JOU Child Resource. The column titled “Special Child Derivation” identifies any derivation principles or methodologies for Master File parameters submitted at the JOU Parent Resource level. The CAISO will provide the entire list of parameters to the Parties as part of the JOU Model and JOU Pilot implementation, which will supersede the list provided below.

Master File Parameter	Child Match Parent	Special Child Derivation
JOU Flag	x	

Master File Parameter	Child Match Parent	Special Child Derivation
Fuel Type	x	
Technology Type	x	
AS flags (spin, non-spin, regulation)	x	
Ramp Up/Down	x	
MDS	x	
MDT	x	
MUT	x	
SU Ramp Time	x	
LMP Eligibility Flag	x	
Heat Emission Rate	✘	Null
Start Down Time (aka Cooling Time)	x	
SUT	x	
Default GDF	x	
DEB Options Ranking	x	
Default DEB Options Ranking	x	
GHG Emission Rate	x	
GHG Compliance Obligation Flag	x	
VOMC	x	
SUC		Null
SUE		Null
SUF		Null
HR-MW		Null
HR		Null
HAVGC		Null
ROPR <u>(applicable to Min, Max and Market ramp rates)</u>		Null
RREG <u>(applicable to Min, Max and Market ramp rates)</u>		Null

Master File Parameter	Child Match Parent	Special Child Derivation
Lower Forbidden Region MW (LFR)		Null
Upper Forbidden Region MW (UFR)		Null
Forbidden Region Crossing Time (FRCT)	✘	<u>Null</u>

- 1.13.1. The JOU Child SC must ensure that the JOU Child Resource name will be structured in a manner to provide ease of reference to the associated JOU Parent Resource. The CAISO may reject the proposed name from the JOU Child SC if it does not create ease of reference to the JOU Parent Resource name.

2. Telemetry Requirements

- 2.1. The JOU Parent SC is limited to and required to submit the physical telemetry and Meter Data for the JOU Parent Resource, and the JOU Child SC is limited to and required to submit the logical telemetry and Meter Data for the JOU Child Resource.
- 2.2. Regarding JOU Parent Resource and JOU Child Resources that are certified for AS, the JOU Parent SC and JOU Child SC must submit direct telemetry for their respective resources using a real-time device or RIG.

3. Calculated Costs for JOU Resources

- 3.1. The JOU Child Resource will receive the same greenhouse gas maximum compliance cost calculated for the JOU Parent Resource.
- 3.2. The calculation of the Intermediate PMin of the JOU Child Resource will be as follows:
- 3.2.1. If the sum of the individual PMin of the JOU Child Resources equal the PMin of the JOU Parent Resource, the Intermediate PMin of the JOU Child Resource will be equal to its PMin.
- 3.2.2. If the sum of the individual PMin of the JOU Child Resources does not equal the PMin of the JOU Parent Resource:
- 3.2.2.1. The Intermediate PMin of each JOU Child Resource will be the maximum of the individual PMin and pro-rata PMin of the JOU Child Resource, where the pro-rata PMin is the product of the PMin of the JOU Parent Resource and the percentage share associated with the JOU Child Resource.
- 3.2.3. The calculation of the Intermediate LOL will follow the same methodology, replacing PMin with LOL in the calculations.
- 3.3. The manual consult price will be calculated solely for the JOU Parent Resource.

- 3.4. The Negotiated Rate Option is the sole DEB option available to JOU Parent Resources and JOU Child Resources. Each JOU Child SC will be responsible for establishing the Negotiated Rate Option DEB for its JOU Child Resource.
- 3.5. The energy price index calculated for the JOU Parent Resource will be applied to its JOU Child Resources.
- 3.6. ~~The major maintenance adder component and~~The negotiated major maintenance adder of the Minimum Load Cost and Start-Up Cost ~~calculated~~established for the JOU Parent Resource will be applied to its JOU Child Resources using a pro-rata allocation based on the percentage share associated with each JOU Child Resource. The JOU Parent SC will be responsible for applying for the negotiated major maintenance adder.

4. Outage Management for JOU Resources

- 4.1. The JOU Parent SC will be allowed to submit and view outages solely for the JOU Parent Resource.
- 4.2. The JOU Parent SC may view outages applicable to its JOU Child Resources only if authorized by the applicable JOU Child SC. The JOU Child SC may delegate authority to the JOU Parent SC of its JOU Parent Resource to submit outages on its behalf.
- 4.3. The JOU Child SC will be allowed to submit and view outages solely for the JOU Child Resource it represents. The table below describes the categories of outages that can be submitted for the JOU Parent Resource and the JOU Child Resource. For those outages that can only be submitted for the JOU Parent Resource, the outages will be translated for application to the JOU Child Resource in the manner described below.
 - 4.3.1. A Pmin re-rate outage on JOU Parent Resource will be applied to its JOU Child Resources in accordance with calculation methodology for Intermediate LOL described in this Attachment A.
 - 4.3.2. An out of service outage on JOU Parent Resource will set the same out of service outage status for its JOU Child Resources, including any subsequent modifications to this outage status.
 - 4.3.3. A ramp rate de-rate outage on JOU Parent Resource will be applied to its JOU Child Resources as described in this Attachment A.

Outage Category	Allowed to be submitted for JOU Parent Resource	Allowed to be submitted for JOU Child Resource
Out Of Service	x	
Pmin Rerate	x	
Pmax Derate	x	x
Ramp rate Derate	x	

- 4.4. The JOU Child SC will not be allowed to view outages on the JOU Parent Resource or other associated JOU Child Resources, unless the JOU Child SC is authorized to view outages applicable to another JOU Child Resource by the responsible JOU Child SC.

- 4.5. This scaling factor methodology is applied when JOU Parent Resource Master File registered ramp rate is subject to de-rates. A scaling factor is calculated by utilizing the following methodology and the values applicable to the JOU Parent Resource: the de-rated highest ramp rate segment divided by the Master File registered highest ramp rate segment. The de-rates of the JOU Parent Resource Master File registered ramp rates will be translated to the JOU Child Resources by multiplying the JOU Child Resource's Master File registered ramp rates with the scaling factor.
- 4.6. The treatment of overlapping outages between the JOU Parent Resource and its JOU Child Resources will be treated in accordance with the outage management provisions of the CAISO Tariff applicable to EIM Resources.
- 4.7. If an out of service outage on the entire JOU Parent Resource is applied to its JOU Child Resources, the JOU Child SC will be allowed to view, but not edit, the translated outage data on its JOU Child Resource.

5. Market Participation for JOU Resources

- 5.1. The JOU Child Resource will be allowed to participate in the Energy Imbalance Market in the same manner as an EIM Participating Resource in accordance with the CAISO Tariff and this Attachment A. The JOU Child Resources of a single JOU Parent Resource will be allowed to have different Energy and Flexible Ramp Up/Down bids. The JOU Child SC will be allowed to only view the ~~bids it has submitted~~Bids it has submitted. The JOU Child SC will be allowed to view aggregated operational information related to the total schedule applicable to its JOU Parent Resource, with this functionality being available at a date later than the TEP Implementation Date.
- 5.2. The JOU Parent SC will not be allowed to submit Bids and Base Schedules, or provision Ancillary Services. The JOU Parent SC will not be allowed to view any Bids or Base Schedules it has not submitted.
 - 5.2.1. ~~Only~~The aggregated Base Schedule information applicable to the JOU Parent Resource may be viewed by its Balancing Authority Area Entity.
- 5.3. ~~The JOU Child SC and the JOU Parent SC may not submit a revised DEB curve, and will only be allowed to review the revised as part of the Variable Cost Option for establishing a DEB-curves it has submitted., with the Variable Cost option not being available for JOU Resources..~~
- 5.4. The Default SUC and Default MLC calculated for the JOU Parent Resource will be applied to the JOU Child Resource in a pro-rata manner using the percentage share associated with each JOU Child Resource. A JOU Child SC will only be allowed to view the calculated Default SUC and Default MLC for its JOU Child Resource, irrespective of whether it is an Active or Inactive JOU Child Resource.
- 5.5. The Reasonableness Threshold ~~for SUC and MLC will not be~~ calculated for the JOU Parent Resource ~~will be applied to~~ the JOU Child Resource ~~in a pro-rata manner using the percentage share of the individual JOU Child Resource.~~
- 5.6. The JOU Child SC may submit revised values of the Default SUC and Default MLC for an Active JOU Child Resource, and will have the sole right to access and view

the submittals. The submitted revised Default SUC and Default MLC for Active JOU Child Resources will be validated by the CAISO.

5.7. The JOU Child SC will have the sole right to submit and view the Base Schedules for Energy and Ancillary Services for the JOU Child Resource.

5.8. The submitted Base Schedules on the JOU Child Resources will be deemed valid even if the aggregate of the Base Schedules is lower than the PMin of the JOU Parent Resource. The submittal and the validation of the Base Schedules will result in the JOU Parent Resource being deemed to be in Start-Up subject to existing additional conditions defined below under Section 5.9.

5.9. The JOU Parent Resource will be ~~transitioned~~recognized to be in Start-Up mode when it meets the ~~followingsame~~ conditions ~~are all met:~~ ~~a) submitted Base Schedules on the JOU Child applicable to EIM Resources, in aggregate, is lower than the PMin of the~~ If the JOU Parent Resource, ~~and b) the JOU Parent Resource has~~ is recognized to not be in Start-Up mode, it will retain its current Commitment Status ~~as "Off", and c) the JOU Parent meets its MIN_OFF time requirement. If the above condition under c) is not satisfied, the submitted Base Schedules are ignored and~~ If the JOU Parent Resource retains its Commitment Status as "Off". Moreover, the following steps will be taken:-", the submitted Base Schedules are ignored. "

~~5.9.1-5.10.~~ The Real-Time Base Schedule balancing test and the flexible ramp test will utilize the submitted Base Schedules of the JOU Child Resources. The flexible ramp test will utilize the Master File registered ramp rate of the JOU Child Resources, subject to adjustments due to de-rates or revisions of the Master File registered ramp rate of the JOU Parent Resource.

~~5.10-5.11.~~ While the JOU Parent Resource is in Start-Up, no Bids for the JOU Child Resources will be utilized in RTM ~~or published as part of the final Bid set by the applicable CAISO web services~~, and only zero MW DOTs for the JOU Child Resources will be created.

~~5.11-5.12.~~ When a JOU Parent Resource has Inactive JOU Child Resources, the Default SUC of the Inactive JOU Child Resource will be allocated to the Active JOU Child Resources in proportion to their relative percentage shares.

*Adjusted SUC (due to Inactive JOU Child Resource) = Sum of Default SUC of all Inactive JOU Child Resources * (ratio of percentage share of Active JOU Child Resource over the sum of percentage shares of all Active JOU Child Resources.)*

The allocation of Default MLC of the Inactive JOU Child Resources will follow the above-described formula, by replacing SUC with MLC.

~~5.12-5.13.~~ When a JOU Parent Resource has a PMin re-rate, the MLC of all Active JOU Child Resources and the Default MLC of Inactive JOU Child Resources, will be adjusted in accordance with the CAISO Tariff, considering any Intermediate PMin or Intermediate LOL created for the JOU Child Resource. Any such adjustment will have priority over any re-allocation of the Default MLC of an

Inactive JOU Child Resource to the Default MLC of Active Child Resources of the same JOU Parent Resource.

~~5.12.1.5.13.1.~~ The Adjusted MLC (for Active JOU Child Resources) and Adjusted Default MLC (for all JOU Child Resources) is equal to the sum of the MLC (for Adjusted MLC) or Default MLC (for adjusted Default MLC), and the product of the DEB and the difference between the calculated Intermediate LOL and Intermediate PMin.

*Adjusted MLC or Adjusted DMLC (due to PMin re-rate) = MLC or Default MLC * (DEB * [Intermediate LOL- Intermediate PMin])*

~~5.12.2.5.13.2.~~ When a JOU Parent Resource has a PMin re-rate as well as Inactive JOU Child Resources, the Adjusted MLC is calculated as follows:

The Adjusted MLC derived under Section ~~5.15.1~~ 5.13.1 of this Attachment A is now adjusted using the formula applied towards adjustment of MLC of Active JOU Child Resources to re-allocate the Default MLC of Inactive JOU Child Resources.

*Adjusted MLC (due to Inactive JOU Child Resource) = Adjusted MLC (due to PMin re-rate) + (Adjusted DMLC of Inactive JOU Child Resource * [ratio of percentage share of Active JOU Child Resource over the sum of percentage shares of all Active JOU Child Resources])*

~~5.13.5.14.~~ The Adjusted MLC and Adjusted SUC of the JOU Parent Resource will be the sum of the Adjusted MLCs and Adjusted SUCs of all its Active JOU Child Resources, respectively, when such adjustments are made in accordance with Sections 5.12 and 5.13 of this Attachment A.

~~5.14.5.15.~~ The JOU Child Resources will be constrained to the same Commitment Status as the JOU Parent Resource.

~~5.15.5.16.~~ There will be no Commitment Costs modeled for a JOU Parent Resource during its Self-Commitment Period, when the JOU Parent Resource is in a Self-Commitment Period due to one or more of its JOU Child Resources being subject to a Self-Commitment Period.

~~5.17.~~ When one JOU Child Resource submits a Self-Schedule or a Base Schedule, all Active JOU Child Resources belonging to the same JOU Parent Resource will be entered into a Self-Commitment Period ~~with Self-Schedules or Base Schedules to atleast their PMin.~~

~~5.16.5.17.1.~~ The JOU Parent Resource of these JOU Child Resources will also be entered into a Self-Commitment Period.

~~5.17.5.18.~~ The JOU Parent Resource will be constrained by certain physical constraints during its Commitment Period as identified below:

- PMax
- PMin
- Lower Regulation Limit
- Lower Forbidden Region

- Upper Forbidden Region
- Ramp rate
- Physical transmission constraints

The constraints enforced on the JOU Parent Resource will not be enforced on the JOU Child Resource Ramp Rates.

~~5-18~~5.19. JOU Child Resource schedules will be constrained by various limits during its Commitment Period as identified below:

- Power balance constraint of the Native BAA or Attaining BAA
- Scheduling limits of the Native BAA or Attaining BAA
- Capacity constraints and scheduling limits of the JOU Child Resource.
- Lower Economic Limit and Upper Economic Limit of JOU Child Resource

~~5-19~~5.20. For a JOU Child Resource that is registered as an EIM Participating Resource, the GHG allocation to the various GHG compliance areas will be calculated using its EIM Bid Adder.

~~5-20~~5.21. JOU Child Resources will have the LMPM eligibility flag enabled automatically if their JOU Parent Resource has the LMPM eligibility flag enabled, and the Dynamic Competitive Path Assessment process will mitigate the JOU Child Resource to its DEB if applicable.

~~5-21~~5.22. The calculation of the counter flow capacity will be calculated using the registered attributes of the JOU Child Resources

~~5-22~~5.23. There may be restrictions imposed on EIM Manual Dispatch Instructions submitted by the Native BAA to dispatch the Start-Up or Shut-Down of a JOU Parent Resource. The Native BAA will have the sole right to submit these Start-Up or Shut-Down instructions and such instructions will be communicated to the JOU Parent SC.

~~5-23~~5.24. The Attaining BAA of the JOU Child Resource will not be allowed to submit EIM Manual Dispatch Instructions affecting its Start-Up or Shut-Down, but can do so for dispatching it to a certain MW level. These instructions will be communicated to the JOU Child SC.

~~5-24~~5.25. All EIM Manual Dispatch Instructions on a JOU Parent Resource will be applicable to its JOU Child Resources as well.

~~5-25~~5.26. When a JOU Parent Resource is subject to EIM Manual Dispatch Instruction for Start-Up and there are no corresponding EIM Manual Dispatch Instructions on the JOU Child Resources, there will be EIM Manual Dispatch Instructions created for its JOU Child Resources to dispatch them to the appropriate MW value to support the JOU Parent Resource Commitment Period. These EIM Manual Dispatch Instructions will dispatch the Active JOU Child Resources to the PMin, if the sum of the individual PMin of the JOU Child Resources equals the PMin of the JOU Parent Resource; otherwise the Active JOU Child Resources will be dispatched to the appropriate MW level to ensure that the sum of their individual dispatched MW levels equals the PMin of the JOU Parent Resource. If the dispatch of the Active Child Resources to their maximum

available MW capacity results in an aggregate MW level lower than the PMin of the JOU Parent Resource, there will be EIM Manual Dispatch Instructions created for Inactive JOU Child Resources as well, such that the aggregate MW level of dispatch considering all the JOU Child Resources equals the PMin of the JOU Parent.

~~5.25.1-5.26.1.~~ If the EIM Manual Dispatch Instruction for Start-Up of the JOU Parent Resource is a verbal post-market EIM Manual Dispatch Instruction and there are no corresponding EIM Manual Dispatch Instructions on the JOU Child Resources, there will be EIM Manual Dispatch Instructions created for the JOU Child Resources to dispatch them to their Intermediate PMin. ~~The dispatch to Intermediate PMin will only apply to Active JOU Child Resources unless all JOU Child Resources are Inactive JOU Child Resources.~~

~~5.26-5.27.~~ When a JOU Parent Resource is subject to EIM Manual Dispatch Instruction for Shut-Down, there will be new EIM Manual Dispatch Instructions created or existing EIM Manual Dispatch Instructions modified for its Active JOU Child Resources to dispatch them to zero (0) MW value to support the JOU Parent Resource Commitment Period.

~~5.26.1-5.27.1.~~ If the EIM Manual Dispatch Instruction that dispatches the JOU Parent Resource to Shut-Down is a verbal post-market EIM Manual Dispatch Instruction, there will be EIM Manual Dispatch Instructions created for the JOU Child Resources to dispatch them to 0 MW. The dispatch to zero MW will only apply to Active JOU Child Resources unless all JOU Child Resources are Inactive JOU Child Resources.

~~5.26.2.~~

~~5.27-5.28.~~ If the EIM Manual Dispatch Instructions for a JOU Parent Resource or a JOU Child Resource conflict with previous EIM Manual Dispatch Instructions, or apply to an Inactive JOU Child Resource, the following actions will be taken:

~~5.27.1-5.28.1.~~ The Native BAA and Attaining BAA will be notified of the conflict, and will individually and jointly be responsible for the resolution of such identified conflicts,

~~5.27.2-5.28.2.~~ The JOU Parent SC and JOU Child SC will be notified of the conflict.

~~5.28-5.29.~~ All EIM Manual Dispatch Instructions submitted for the JOU Child Resources will be aggregated and applied to its JOU Parent Resource, if the EIM Manual Dispatch Instructions are of the same type and can be aggregated. Such EIM Manual Dispatch Instructions will be communicated to the Native BAA and the JOU Parent SC.

~~5.29-5.30.~~ The Schedules and Dispatch Instructions applicable to the JOU Child Resources will be utilized to construct appropriate Schedules and Dispatch Instructions for the JOU Parent Resource. For the JOU Parent Resource, an Energy Schedule will be derived as the sum of Energy Schedules of all of its JOU Child Resources.

~~5.30-5.31.~~ There will be no calculation of Expected Energy, Expected Energy allocation, or commodity allocation, for a JOU Parent Resource.

~~5.31-5.32.~~ If the Base Schedules of the JOU Child Resources associated with the same JOU Parent Resource, in aggregate, is lower than the PMin of the JOU Parent Resource, the Expected Energy of the JOU Child Resource will be calculated in accordance with the following methodology:

~~5.31.1-5.32.1.~~ If all the Dispatch Operating Targets of the JOU Child Resources are zero, the JOU Parent Resource will be considered to be in Start-Up, and the Expected Energy for all the JOU Child Resources will be calculated in accordance with EIM Base Schedule submission deadline rules.

~~5.31.2-5.32.2.~~ If any of the Dispatch Operating Targets of the JOU Child Resources are greater than 0.01 MW, the JOU Parent Resource is considered to be in Commitment Status type “On”, and Expected Energy for all the JOU Child Resources will be calculated in accordance with the CAISO Tariff.

~~5.32-5.33.~~ If the Base Schedules of the JOU Child Resources associated with the same JOU Parent Resource, in aggregate, is equal to or higher than the PMin of the JOU Parent Resource, the Expected Energy of the JOU Child Resource will be calculated in accordance with the CAISO Tariff provisions applicable to EIM Resources.

~~5.33-5.34.~~ The JOU Parent SC will only receive access to the data published for its JOU Parent Resource, while the JOU Child SC will only receive access to the data published pertaining to its JOU Child Resource.

~~5.34-5.35.~~ The JOU Parent SC will only receive access to ADS Instructions associated with its JOU Parent Resource, while the JOU Child SC will only receive access to ADS instructions associated with its JOU Child Resource.

5.36. The Start-Up Time submitted as part of the Start-Up Bid for a JOU Child Resource will be rejected, if it does not precisely match the Start-Up Time registered in Master File for the corresponding JOU Child Resource.

6. Metering

6.1. The JOU Parent SC will ensure that revenue grade meters are utilized for the purposes of submitting physical Meter Data to CAISO for the JOU Parent Resource. The CAISO will not use any Meter Data submitted by the JOU Parent SC for the JOU Parent Resource, for settling any Charge Codes.

6.2. For a JOU Child Resource, its JOU Child SC will submit Meter Data in accordance with the particular JOU Child Resource’s SQMD Plan. For the purposes of the SQMD Plan, the JOU Child SC will ensure metering devices are established at the respective Inter-Ties where the Energy from the JOU Child Resource is measured.

6.3. The JOU Parent SC of the JOU Parent Resource and JOU Child SCs of its JOU Child Resources will ensure that their submitted Meter data have an equal level of granularity.

6.4. All T + 52B Meter Data submitted for a JOU Parent Resource will be compared against its JOU Child Resources, and the Meter Data for both types of resources

will fail validation if their difference is outside of the specified tolerance. This specified tolerance is established to account for numerical rounding errors caused by the utilization of JOU Parent Resource Meter Data for purposes of logically calculating JOU Child Resource Meter Data. The Meter Data for the JOU Child Resources that failed validation will still be used for Settlements without any modification by CAISO. A daily report, detailing the Meter Data intervals that failed validation and associated supporting information, will be generated and provided to the applicable JOU Parent SC's and JOU Child SC's. The JOU Parent SC and JOU Child SCs are responsible for correcting and re-submitting the Meter Data intervals that failed validation, and failure to do so will be addressed in accordance with CAISO Tariff provisions applicable to Meter Data submissions.

7. Settlements

- 7.1. All JOU Child Resources will be subject to Settlement in accordance with the CAISO Tariff provisions applicable to EIM Participating Resources and EIM non-participating resources. The JOU Parent Resource will not be subject to any Settlement, nor will there be any administrative fees or charges applicable to the JOU Parent Resource with respect to the implementation and operation of the unique Scheduling Coordinator ID code associated with the JOU Parent Resource.
- 7.2. As part of the Bid Cost Recovery process, commitment cost qualification calculations will be performed for the JOU Parent Resource by comparing the submitted Meter Data and effective PMin (and any LOL) of the JOU Parent Resource. All JOU Child Resources of the JOU Parent Resource will receive the outcome of this commitment cost qualification process.
- 7.3. For calculating the Persistent Deviation Metric and Real-Time Performance Metric, there will be a ramp rate calculated for the JOU Child Resources in the following manner: the delta of the DOTs from consecutive Settlement Intervals divided the time difference between those Settlement Intervals.