California Energy Commission
May 31, 2023 Business Meeting
Backup Materials for Agenda Item No 03d:
Charge Bliss, Inc.

The following backup materials for the above-referenced agenda item are available in this PDF packet as listed below:

1. Proposed Resolution
2. Grant Request Form with Att. 1 TBD Subcontractor List
3. CEQA Memo
4. Scope of Work

RESOLUTION NO: 23-0531-03d

STATE OF CALIFORNIA

STATE ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION: Charge Bliss, Inc.

RESOLVED, that the State Energy Resources Conservation and Development Commission (CEC) adopts the staff California Environmental Quality Act (CEQA) findings and the noncompetitive award determination contained in the Agreement or Amendment Request Form (as applicable); and

RESOLVED, that the CEC approves Agreement LDS-22-003 with Charge Bliss, Inc. for a $32,750,000 grant to fund deployment of a 5 MW solar generation and 20 MWh non-lithium-ion Long Duration Energy Storage (LDES) system. The LDES system will be operated as part of a microgrid using solar generation and energy storage to improve the Paskenta Band of Nomlaki Indians site resiliency. The project will demonstrate the microgrid's ability to power critical operations during grid outages, such as Public Safety Power Shut Off events, and peak grid demand; and

FURTHER BE IT RESOLVED, that the Executive Director or their designee shall execute the same on behalf of the CEC.

CERTIFICATION

The undersigned Secretariat to the CEC does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the CEC held on May 31, 2023.

AYE:
NAY:
ABSENT:
ABSTAIN:

Dated:

_____
Liza Lopez
Secretariat

STATE OF CALIFORNIA
CALIFORNIA ENERGY COMMISSION

CEC-270 (Revised 9/2022)

GRANT REQUEST FORM (GRF)

A. New Agreement Number

IMPORTANT: New Agreement # to be completed by Contracts, Grants, and Loans Office.

New Agreement Number: LDS-22-003

B. Division Information

1. Division Name: ERDD
2. Agreement Manager: Javier Flores
3. MS-:None
4. Phone Number: 916-931-9604

C. Recipient's Information

1. Recipient's Legal Name: Charge Bliss, Inc.
2. Federal ID Number: 45-4012582

D. Title of Project

Title of project: Paskenta Microgrid-Long Duration Energy Storage

E. Term and Amount

1. Start Date: 6/15/2023
2. End Date: 6/15/2029
3. Amount: $32,750,000

F. Business Meeting Information

1. Are the ARFVTP agreements $75K and under delegated to Executive Director? No
2. The Proposed Business Meeting Date: 5/31/2023 .
3. Consent or Discussion? Consent
4. Business Meeting Presenter Name: Mike Gravely
5. Time Needed for Business Meeting: 10 minutes.
6. The email subscription topic is: Research (Energy RD&D / PIER program).

Agenda Item Subject and Description:

Charge Bliss, Inc. Proposed resolution approving agreement LDS-22-003 with Charge Bliss, Inc. for a $32,750,000 grant to fund deployment of a 5 MW solar generation and 20 MWh non-lithium-ion Long Duration Energy Storage (LDES) system, and adopting staff's determination that this action is exempt from CEQA. The LDES system will be operated as part of a microgrid using solar generation and energy storage to improve the Paskenta Band of Nomlaki Indians site resiliency. The project will demonstrate the microgrid's ability to power critical operations during grid outages, such as Public Safety Power Shut Off events, and peak grid demand. (LDES funding) Contact: Mike Gravely

G. California Environmental Quality Act (CEQA) Compliance

1. Is Agreement considered a "Project" under CEQA?
Yes

If yes, skip to question 2.

If no, complete the following (PRC 21065 and 14 CCR 15378) and explain why Agreement is not considered a "Project":

Agreement will not cause direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment because:

2. If Agreement is considered a "Project" under CEQA answer the following questions.

a) Agreement **IS** exempt?

Yes

Statutory Exemption?
No If yes, list PRC and/or CCR section number(s) and separate each with a comma. If no, enter "None" and go to the next question.

PRC section number:

CCR section number: CCR section number 1, CCR section number 2. Or, None

Categorical Exemption?
No If yes, list CCR section number(s) and separate each with a comma. If no, enter "None" and go to the next question.

CCR section number:

Common Sense Exemption? 14 CCR 15061 (b) (3)
Yes If yes, explain reason why Agreement is exempt under the above section. If no, enter "Not applicable" and go to the next section.

This project is covered by the Common Sense Exemption under 14 CCR 15061 (b) (3) that CEQA applies only to projects which have the potential for causing a significant effect on the environment. Where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment, the activity is not subject to CEQA.

The Paskenta Band of Nomlaki Indians entered into a 2020 Gaming Compact with the State of California. The Legislature ratified the compact in California Government Code, section 12012.101. Under the Gaming Compact, the State has agreed to NOT follow the typical CEQA process in circumstances like this grant. Government Code section 12012.101(b) indicates:

> In deference to tribal sovereignty, none of the following shall be deemed a project for purposes of the California Environmental Quality Act . . .
>
> > (D) The execution of an intergovernmental agreement between a tribe and the Department of Transportation, or other state agency, negotiated pursuant to the express authority of, or as expressly referenced in, a tribal-state gaming compact or an amended tribal-state gaming compact ratified by this section.
> >
> > (E) The on-reservation impacts of compliance with the terms of a tribal-state gaming compact or an amended tribal-state gaming compact ratified by this section.

The grant activities fall under the Gaming Compact. The proposed Project consists of a single phase of development that will serve the entire gaming facility and accessory facilities amounting to an average peak load of approximately 1 MW. The Tribe has

explained its environmental compliance under the Gaming Compact for this project in the Tribal Environmental Evaluation (TEE), which is included as part of the business meeting backup material for this item. The TEE shows that environmental factors have been evaluated and avoided or mitigated. On May 18, 2023, the Tribal Council of the Paskenta Band of Nomlaki Indians approved the issuance of a Finding of No Significant impact for the project through Resolution Number TC2023-46, which is also included as part of the business meeting backup materials for this item.

Off-reservation impacts must still be evaluated under Government Code section 12012.101(b)(2), but this project is exempt under the "common sense" CEQA exemption because the proposed project will not:

- construct on or alter any off-reservation land;
- impact local air quality;
- use groundwater resources or otherwise impact any off-reservation water resources;
- build additional transportation infrastructure;
- generate additional traffic volumes from commercial activities of the Casino;
- increase, once the project is complete, ambient noise beyond the existing commercial activities; or
- degrade the visual character or quality of off-reservation views, including those of scenic resources or objects of aesthetic significance.

Compared with the current supply of energy, the proposed project will improve energy resiliency for Tribal facilities and the local electric grid, as well as reduce overall energy demand on the local energy provider and lower fossil fuel usage and greenhouse gas (GHG) emissions. Because the proposed project will improve air quality and reduce GHG emissions, and does not provide for any physical changes outside of the Indian reservation, it can be seen with certainty that there is no possibility that the proposed project may have a significant effect on the off-reservation environment. Based on all these factors, the proposed project meets the CEQA "common sense" exemption.

This project does not involve impacts on any particularly sensitive environment; does not involve any cumulative impacts of successive projects of the same type in the same place that might be considered significant; does not involve unusual circumstances that might have a significant effect on the environment; will not result in damage to scenic resources within a highway officially designated as a state scenic highway; the project site is not included on any list compiled pursuant to Government Code section 65962.5; and the project will not cause a substantial adverse change in the significance of a historical resource. Therefore, none of the exceptions to categorical exemptions listed in CEQA Guidelines section 15300.2 apply to this project and this project will not have a significant effect on the environment.

See attached CEQA memo for additional information.

b) Agreement **IS NOT** exempt.

IMPORTANT: consult with the legal office to determine next steps.

No

If yes, answer yes or no to all that applies. If no, list all as “no” and “None” as “yes”.

Additional Documents	Applies
Initial Study	No
Negative Declaration	No
Mitigated Negative Declaration	No
Environmental Impact Report	No
Statement of Overriding Considerations	No
None	Yes

H. Subcontractors

List all Subcontractors listed in the Budget (s) (major and minor). Insert additional rows if needed. If no subcontractors to report, enter “No subcontractors to report” and “0” to funds. **Delete** any unused rows from the table. For additional TBD Subcontractors, see Attachment 2.

Subcontractor Legal Company Name	CEC Funds	Match Funds
Charge Bliss Construction CA, Inc.	$ 31,513,040	**$**0
Woven Energy LLC	$ 776,960	**$**0
Paskenta Band of Nomlaki Indians	$ 0	**$**3,000,000
Dan Gero (CAISO Market Activity Support)	$ 50,000	**$**0
See attached list for additional TBD subcontractors		

I. Vendors and Sellers for Equipment and Materials/Miscellaneous

List all Vendors and Sellers listed in Budget(s) for Equipment and Materials/Miscellaneous. Insert additional rows if needed. If no vendors or sellers to report, enter “No vendors or sellers to report” and “0” to funds. **Delete** any unused rows from the table.

Vendor/Seller Legal Company Name	CEC Funds	Match Funds
Redflow	**$11,908,954.75**	**$**

J. Key Partners

List all key partner(s). Insert additional rows if needed. If no key partners to report, enter “No key partners to report.” **Delete** any unused rows from the table.

Key Partner Legal Company Name
No key partners to report

K. Budget Information

Include all budget information. Insert additional rows if needed. If no budget information to report, enter "N/A" for "Not Applicable" and "0" to Amount. **Delete** any unused rows from the table.

Funding Source	Funding Year of Appropriation	Budget List Number	Amount
GENERAL	22-23	303.101	$ 32,750,000

TOTAL Amount: $32,750,000

R&D Program Area: ESRB: ETSI

Explanation for "Other" selection Not applicable

Reimbursement Contract #: Not applicable

Federal Agreement #: 3360-102-0001

L. Recipient's Contact Information

1. Recipient's Administrator/Officer

Name: Julie Papike

Address: 25 Mauchly Ste 320

City, State, Zip: Irvine, CA 92618-2361

Phone: 949-305-7820; ext. 3

E-Mail: jpapike@faradaymicro.com

3. Recipient's Project Manager

Name: Ryan Bliss

Address: 25 Mauchly Ste 320

City, State, Zip: Irvine, CA 92618-2361

Phone: 949-305-7820; ext 4

E-Mail: rbliss@faradaymicro.com

M. Selection Process Used

There are three types of selection process. List the one used for this GRF.

Selection Process	Additional Information
Competitive Solicitation #	Not applicable
First Come First Served Solicitation #	Not applicable

Other	This noncompetitive award is authorized under (PRC 25643(d)(1) because recipient has received funding for the original project (EPC-02-002) through a competitive bid process from the CEC and the awarding of these moneys is consistent with the stated goals and criteria of the Long-Duration Energy Storage Program. This award is also authorized under (PRC 25643(d)(3)) because the cost to the state is reasonable and because it is in the best interest of the state to do so. Recipient is a company with resources to facilitate LDES projects and experience in grid-connected, green energy projects in California and around the world, and the battery to be assessed is unique. Moreover, California needs to dramatically increase its energy storage.

N. Attached Items

1. List all items that should be attached to this GRF by entering “Yes” or “No”.

Item Number	Item Name	Attached
1	Exhibit A, Scope of Work/Schedule	Yes
2	Exhibit B, Budget Detail	Yes
3	CEC 105, Questionnaire for Identifying Conflicts	Yes
4	Recipient Resolution	Yes
5	CEQA Memorandum with Awardee CEQA Documentation	Yes
6	Additional Subcontractor List	Yes

Approved By

Individuals who approve this form must enter their full name and approval date in the MS Word version.

Agreement Manager: Javier Flores

Approval Date: 4/26/2023

Branch Manager: Reynaldo Gonzalez

Approval Date: 4/26/2023

Director: Reynaldo Gonzalez for Jonah Steinbuck

Approval Date: 4/26/2023

LDS-22-003 Charge Bliss, Inc.

Attachment 1 – TBD Subcontractor List

Subcontractor Name	Purpose	Energy Commission Funds
TBD - Electrical Engineering (microgrid)	electrical design of microgrid	$ 300,000
TBD - Electrical Engineering (solar)	electrical design of solar	$ 8,880
TBD - Structural Engineering (microgrid)	structural engineering of microgrid	$ 50,236
TBD - Structural Engineering (solar)	structural engineering of solar structure	$ 8,880
TBD - Civil Engineering	civil engineering for the project	$ 96,950
TBD - Architect	architect for design coordination	$ 116,237
TBD - Geotech	geotechnical reports for soil quality	$ 20,000
TBD - Special Inspector (Civil)	special inspector for subgrade work	$ 37,500
TBD - Special Inspector (Structural)	special inspector for foundation and anchorage work	$ 25,000
TBD - Commissioning Agent	commissioning agent for validation of testing during commissioning	$ 100,000
TBD - Excavation Contractor	contractor for providing subgrade work	$ 2,149,709
TBD - Concrete Contractor	contractor for providing foundation work	$ 429,372
TBD - Electrical Contractor	contractor for providing electrical work	$ 3,067,614
TBD - Security Install	contractor for installing security equipment	$ 177,710
TBD - Controller (Nhu Energy Low)	controls integration, installation, and operation	$ 361,802

State of California
California Energy Commission
Memorandum

To: Chair Hochschild
Vice Chair Gunda
Commissioners Gallardo, McAllister, & Monahan

Date: May 18, 2023
Telephone: (916) 216-1244

From: Allan Ward**,** Assistant Chief Counsel, Transactions Unit
Christina Evola, Attorney, Transactions Unit
Sonia Reasor, Graduate Legal Assistant, Transactions Unit

Subject: CEQA Compliance for Grant Agreement LDS-22-003 with Charge Bliss, Inc.

I. Introduction

California Energy Commission (CEC) staff proposes grant LDS-22-003 with Charge Bliss. The California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 *et seq.*; *see also* CEQA Guidelines, Cal. Code Regs., tit. 14, § 15000 *et seq*.) requires that state agencies assess and prepare environmental documents disclosing any significant adverse environmental impacts of discretionary project approvals. However, under the Gaming Compact within Government Code section 12012.101 (Gaming Compact) between the Paskenta Band of Nomlaki Indians and the State of California, the state agreed not to follow the typical CEQA process in circumstances like this grant, when the proposed project lies wholly within the boundaries of the Indian reservation.[1] CEC staff independently reviewed the facts, including the Tribal Environmental Evaluation (TEE) dated April 4, 2023, and concludes the project will not have any significant off-reservation environmental impacts; therefore, this project is exempt from CEQA under the "common sense" exemption found in Cal. Code Regs., tit. 14, sec. 15061(b)(3).

II. The Project

The purpose of this grant is to fund deployment of 5 MW/20 MWh of non-lithium-ion long duration energy storage (LDES) system. The LDES system will be operated as part of a microgrid that includes 5 MW of solar photovoltaic and serves the Paskenta Band of Nomlaki Indians. The project will demonstrate the microgrid's ability to power critical Tribal operations during outage events, such as Public Safety Power Shut Off (PSPS) events, and peak grid demand.

The project will deploy a 20MWh flow battery coupled with a co-located 5MW solar array to support all or nearly all Tribal energy needs. In particular, the system will be "islandable," or able to operate in parallel to the utility, during prolonged outages. While the expectation of the current design is that the system will be able to support Tribal energy needs for twenty hours, longer durations may be possible. During summer months, when PSPS, excess grid demand, or other factors may lead to outages, the solar array is expected to have its greatest productivity. In this setting, it may be possible for the system to sustain Tribal operations indefinitely. Given adequate power reserves,

[1] *See* Gov. Code § 12012.101(a)(3) and (b)(1)(D)-(E).

the system may also be able to participate in ancillary services such as Automated Demand Response.

III. Location on Tribal Land

The proposed project will be located on a 26.81-acre site on the Paskenta Indian Reservation, located in Tehama County, California.[2] This land is held in trust by the United States for the benefit of the Tribe. The proposed project involves property that lies wholly within the boundaries of the Paskenta Indian Reservation and includes Assessor Parcel Number 087-310-011 within the South One-Half of Section 8, Township 23N, R3W, Mount Diablo Meridian of the "Kirkwood, California" 7.5-minute quadrangle.[3]

IV. Environmental Compliance on Tribal Land Under State-Approved Gaming Compact

The Paskenta Band of Nomlaki Indians entered into a 2020 Gaming Compact with the State of California. The Legislature ratified the compact in California Government Code, section 12012.101:

> The following tribal-state gaming compacts entered into in accordance with the federal Indian Gaming Regulatory Act of 1988 (18 U.S.C. Secs. 1166 to 1168, inclusive, and 25 U.S.C. Sec. 2701 et seq.) are hereby ratified… (3) The compact between the State of California and the Paskenta Band of Nomlaki Indians, executed on August 3, 2020.

Under the Gaming Compact, the State has agreed to NOT follow the typical CEQA process in circumstances like this grant. Government Code section 12012.101(b) indicates:

> In deference to tribal sovereignty, none of the following shall be deemed a project for purposes of the California Environmental Quality Act . . .
>
> > (D) The execution of an intergovernmental agreement between a tribe and the Department of Transportation, or other state agency, negotiated pursuant to the express authority of, or as expressly referenced in, a tribal-state gaming compact or an amended tribal-state gaming compact ratified by this section.
> >
> > (E) The on-reservation impacts of compliance with the terms of a tribal-state gaming compact or an amended tribal-state gaming compact ratified by this section.

The grant activities fall under the Gaming Compact. The proposed Project consists of a single phase of development that will serve the entire gaming facility and accessory facilities amounting to an average peak load of approximately 1 MW. The Tribe has explained its environmental compliance under the Gaming Compact for this project in the TEE. The TEE shows that environmental factors have been evaluated and avoided or mitigated. Specifically, the TEE concludes:

[2] TEE, p. 1.
[3] TEE, p. 2.

> Development of the proposed Project under the Proposed Action Alternative (Preferred Alternative) will not result in any adverse impacts to biological resources on or off the reservation including adjacent wetland habitats or plant and wildlife species associated with wetland habitats. The Preferred Alternative will also not have any negative impact to water and air resources. In fact, the Project will reduce overall carbon emissions associated with serving the Tribe's electric loads following the completion of the planned microgrid. If cultural resources are discovered during construction, the Tribe will cease construction activities and perform an assessment of the resources and implement appropriate mitigation strategies in accordance with the Cultural Resources Manager and Cultural Resources Committee.[4]

On May 18, 2023, the Tribal Council of the Paskenta Band of Nomlaki Indians approved the issuance of a Finding of No Significant impact for the project through Resolution Number TC2023-46, which is attached hereto as Appendix A, and includes the TEE as an attachment.

V. Common Sense Exemption Under CEQA for Any Impacts Outside of Tribal Land

Although the TEE concludes that no off-reservation environmental impacts will occur, the CEC must make its own decision under, and comply with, CEQA. Government Code section 12012.101(b)(2) makes this clear:

> Except as expressly provided in this section, this subdivision does not exempt a city, county, or city and county, or the Department of Transportation, or any state agency or local jurisdiction, from the requirements of the California Environmental Quality Act.

CEQA only applies to projects that have the potential for causing a significant effect on the environment. A significant effect on the environment is defined as a substantial, or a potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance." (Pub. Resources Code, § 21068; Cal. Code Regs., tit. 14, § 15382.)

A project is not subject to CEQA if the activity is covered by the common-sense exemption, where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment. (Cal. Code Regs., tit. 14, § 15.061(b)(3)). Off-reservation impacts are exempt under the "common sense" CEQA exemption because the proposed project will not:

- construct on or alter any off-reservation land;
- impact local air quality;
- use groundwater resources or otherwise impact any off-reservation water resources;
- build additional transportation infrastructure;
- generate additional traffic volumes from commercial activities of the Casino;

[4] TEE, p. 11.

- increase, once the project is complete, ambient noise beyond the existing commercial activities; or
- degrade the visual character or quality of off-reservation views, including those of scenic resources or objects of aesthetic significance.

Compared with the current supply of energy, the proposed project will improve energy resiliency for Tribal facilities and the local electric grid, as well as reduce overall energy demand on the local energy provider and lower fossil fuel usage and greenhouse gas (GHG) emissions. Because the proposed project will improve air quality and reduce GHG emissions, and does not provide for any physical changes outside of the Indian reservation, it can be seen with certainty that there is no possibility that the proposed project may have a significant effect on the off-reservation environment. Based on all these factors, the proposed project meets the CEQA "common sense" exemption.

VI. Conclusion

CEC staff propose grant LDS-22-003 with Charge Bliss, Inc. The project will deploy a 20MWh flow battery coupled with a co-located 5MW solar array. The project will be located entirely on the Paskenta Indian Reservation and falls under the legal purview of the State-approved Gaming Compact. As discussed above, any potential on-reservation environmental impacts, which are not subject to CEQA, the Tribe's TEE shows that environmental factors have been evaluated and fully avoided or mitigated. The Tribe's TEE also shows the project will not have any off-reservation environmental impacts. CEC staff, to assist the CEC to comply with its CEQA requirements, independently reviewed the facts and also concludes the project will not have any significant off-reservation environmental impacts. Therefore, CEC staff recommend the CEC find this project exempt under the "common sense" CEQA exemption.

APPENDIX A

TRIBAL RESOLUTION TC2023-46 (May 18, 2023)

RESOLUTION OF THE TRIBAL COUNCIL
OF THE
PASKENTA BAND OF NOMLAKI INDIANS

RESOLUTION #:	TC2023-46
DATE APPROVED:	May 18, 2023
SUBJECT:	Issuance of a Finding of No Significant Impact Pursuant to the Paskenta Environmental Policy Ordinance

WHEREAS, the Paskenta Band of Nomlaki Indians (the "Tribe") adopted its Tribal Constitution and Bylaws, as amended (the "Constitution") on April 18, 1998 and the Secretary of the Interior or authorized delegate approved said Constitution and Bylaws on May 15, 1998;

WHEREAS, Article III, Section 1 of the Constitution provides that the governing body of the Tribe is the Tribal Council;

WHEREAS, the Tribal Council members indicated below have been duly elected by the General Council of the Tribe in accordance with the Constitution;

WHEREAS, Article VI, Section 1(b) of the Constitution provides that the Tribal Council is authorized to promote the health, education and general welfare of the Tribal Members and to administer charity and such other services as may contribute to the social and economic advancement of the Tribe and its Members;

WHEREAS, Article VI, Section 1(e) of the Constitution provides that the Tribal Council is authorized to manage all economic affairs and enterprises;

WHEREAS, pursuant to Section 11.0 of the 2020 Tribal-State Gaming Compact Between the Paskenta Band of Nomlaki Indians and the State of California (the "Compact"), the Tribe adopted the Paskenta Environmental Policy Ordinance ("Ordinance"), which requires the Tribe to complete an evaluation of any impacts to the Off-Reservation environment prior to the commencement of a project that is directly related to a gaming facility owned by the Tribe; and

WHEREAS, the Tribal Council, acting in accordance with the Ordinance and the Compact, directed the preparation of a draft Tribal Environmental Evaluation (the "TEE") in connection with plans to develop a microgrid solar and battery storage project to support the Tribe's gaming facility and other accessory facilities (the "Project"); and

WHEREAS, the Tribal Council made the TEE available to the public and affected parties, solicited comments on the Project, and responded to comments on the TEE and the Project that were received from various state and local governmental agencies including the California Energy Commission; and

WHEREAS, the Tribal Council has reviewed the TEE and the administrative record prepared in conjunction with the TEE and has determined that the Project will not have a significant impact on the quality of the off-Reservation environment; and

WHEREAS, the Tribal Council has determined that the issuance of a finding of no significant impact and proceeding with the Project in accordance with the Ordinance is in the best interests of the Band.

NOW, THEREFORE, the Tribal Council has passed the following resolutions:

RESOLVED: That, pursuant to section V, subsection (2)(e)(1) of the Ordinance, the Tribal Council accepts the TEE attached hereto as Attachment A.

FURTHER RESOLVED: That the Tribal Council approves the issuance of a Finding of No Significant Impact for the Project.

FURTHER RESOLVED: That the Tribal Council authorizes the Band to proceed with the Project subject to a good faith effort to implement such mitigation measures identified in the TEE as the Tribal Council may find desirable.

[The remainder of this page is intentionally left blank]

CERTIFICATION

THE PASKENTA BAND OF NOMLAKI INDIANS TRIBAL COUNCIL CERTIFIES THAT THESE RESOLUTIONS WERE ADOPTED ON May 18, 2023, WHERE A QUORUM WAS PRESENT, AND THESE RESOLUTIONS WERE ADOPTED BY A VOTE OF 5 FOR, 0 AGAINST, 0 ABSTAINING AND 0 NOT PRESENT, AND THAT SAID RESOLUTIONS HAVE NOT BEEN RESCINDED OR AMENDED IN ANY WAY SINCE THEIR ADOPTION

ANDREW ALEJANDRE, TRIBAL CHAIRMAN — May 18, 2023 DATE

LATISHA MILLER, VICE CHAIRPERSON — May 18, 2023 DATE

NATASHA MAGANA, TREASURER — May 18, 2023 DATE

KEITH RAY, SECRETARY — May 18, 2023 DATE

RACHEL VANSICKLE, COUNCIL MEMBER-AT-LARGE — May 18, 2023 DATE

TRIBAL ENVIRONMENTAL EVALUATION (TEE)
Microgrid Solar and Battery Storage Project
Lead Agency: Paskenta Band of Nomlaki Indians
Department of Public Works

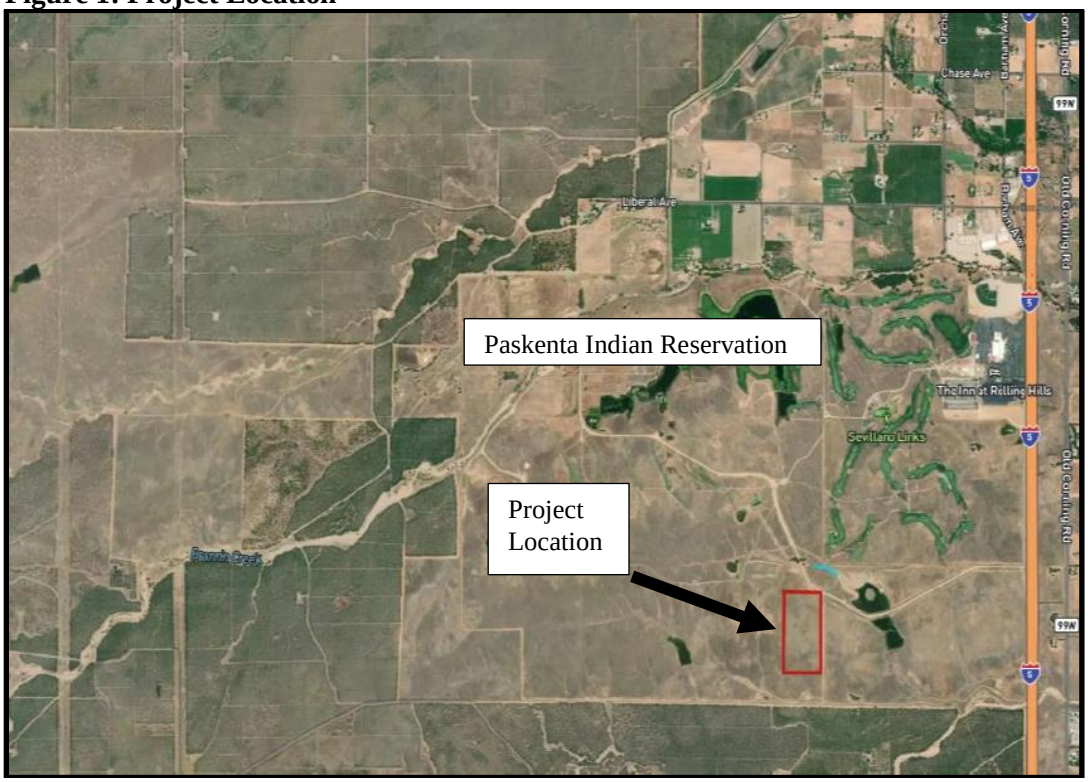
April 4, 2023

TRIBAL ENVIRONMENTAL EVALUATION
Microgrid Solar and Battery Storage Project

I. Introduction

This Final Tribal Environmental Evaluation (TEE) for the Paskenta Band of Nomlaki Indians (Tribe) documents the environmental consequences of the proposed Microgrid - Solar and Battery Storage (Project). The proposed Project will involve the construction of a co-located solar photovoltaic system of approximately 5 megawatts and a battery energy storage unit of approximately 21 megawatt-hours on the Paskenta Indian Reservation, located in Tehama County, California (See Figure 1). The proposed Project will be located on a 26.81 acre site of land held in trust by the United States for the benefit of the Tribe. A biological resource assessment has been prepared by ECORP Consulting, Inc. and is incorporated in this TEE as **Exhibit 1: Biological Review Technical Memorandum for the Proposed Paskenta Band of Nomlaki Indians Microgrid Energy Project in Tehama, County, California**.

Figure 1: Project Location



The proposed project involves property that lies wholly within the boundaries of the Paskenta Indian Reservation and includes Assessor Parcel Number (APN) 087-310-011 within the South One-Half of Section 8, Township 23N, R3W, Mount Diablo Meridian.

The Tribe has used this TEE to address agency comments received from the California Energy Commission; determine whether the proposed Project would result in significant adverse impacts

to the off-Reservation human envirionment; and to fulfill requirements set forth under the Paskenta Environmental Policy Ordinance.

II. Background

This TEE has been completed in accordance with the Paskenta Environmental Policy Ordinance (*See* **Exhibit 3**), which was created pursuant to the Tribal-State Gaming Compact (Compact) with the State of California. The purpose of the Paskenta Environmental Policy Ordinance (Ordinance) is to comply with Section 11 of the Compact with respect to the preparation, circulation, and consideration by the Tribe of an environmental analysis concerning potential off-Reservation environmental impacts of on-reservation projects involving the Tribe's gaming facility and to ensure appropriate public input into the process.

Tribal actions that do not require Bureau of Indian Affairs (BIA) or other Federal approval are not subject to the National Environmental Policy Act (NEPA) process. However, Section 11.2 of the Compact states: "In fashioning the Tribal Environmental Protection Ordinance, the Tribe will incorporate the relevant policies and purposes of NEPA and CEQA consistent with legitimate governmental interests of the Tribe and the State, as reflected in section 11."

The intent of this TEE is to complete the required evaluation of on and off-Reservation impacts that may result because of the proposed Project. The Tribe's Ordinance is consistent with the policies and purposes of NEPA and CEQA.

Although the Project is not subject to NEPA, the format used for the TEE is based, in part, on the Bureau of Indian Affairs' NEPA handbook, known as 59 IAM 3 (formally 30 BIAM Supplement 1).

III. Project Description

The proposed Project consists of a single-phase of development and will be located within an undeveloped area in close proximity to the Tribe's critical loads that will be served by the facility. As shown in Table 1 below, the Project will serve the entire gaming facility and accessory facilities amounting to an average peak load of approximately 1 MW. The Project does not impact any off-reservation water resources, or build additional transportation infrastructure or generate additional traffic volumes from expanded commercial activities of the Casino. The project will improve energy resiliency for Tribal facilities and the local electric grid, as well as

reduce overall energy demand on the local energy provider and lower fossil fuel usage and greenhouse gas emissions.

Table 1: Facilities to be Served by the Project

Paskenta Microgrid Load Projection			
Facility	Annual Usage (kWh)	Avg. Load (kW)	Non-Coincident Peak Demand (kW)
South Casino Meter	6,511,077	743	1188
RV Park/Laundry	362,939	41	215
Gas Station	343,227	39	60
North Hotel	316,323	36	92
Wastewater Treatment	285,154	33	56
South Hotel	265,588	30	64
Equestrian Center	190,318	22	85
Golf Clubhouse	190,273	22	81
North Casino Meter	152,051	17	34
Truckers Lounge	126,359	14	33
Golf Workshop	75,859	9	20
Amphitheater	68,336	8	129
Total	**8,887,503**	**1015**	**2057**

IV. Purpose and Need for the Proposed Action

The Tribe has recently completed a casino expansion project as part of its pursuit of economic self-sufficiency which has created an increase in energy demand and consumption. The purpose of the proposed Project is to enhance energy resiliency and support the Tribe's energy needs with renewable energy sources, as well as increase energy security and environmental sustainability on the reservation.

V. Proposed Action and Alternatives

As discussed in Section II of this TEE, the format used in the development of the environmental documentation is voluntarily based on BIA guidance documents. The BIA NEPA Handbook suggests that environmental assessment is to consider alternatives to the proposed action. The Tribe has identified a total of three main alternatives: Proposed Action, No Mitigation Alternative, and No Action Alternative.

The inherent intent of the analysis of alternatives in this TEE is to present to Tribal decision-makers a reasonable range of alternatives that are both feasible and sufficiently different from each other in critical aspects. Section 1502.14(a) of the Council of Environmental Quality's (CEQ) Regulations for implementing NEPA requires a brief discussion of alternatives that were eliminated from further study and the reasons for their elimination. Several factors were considered in determining which alternatives should not be subjected to detailed analysis and review. First, alternatives that are not reasonably feasible were not subject to further analysis. Second, alternatives that do not accomplish the purpose of an action were not studied in detail. Third, alternatives that do not significantly differ from other alternatives subjected to detailed analysis were not studied in detail. The No Mitigation Alternative below was considered for

development but rejected from detailed analysis: (1) because this alternative was determined to be unfeasible and would not fulfill the stated purpose and need; and (2) because this alternative was not sufficiently different from other alternatives analyzed herein.

A. Proposed Action Alternative (Preferred Alternative)

The Proposed Action Alternative (preferred alternative) is to construct the Project on a buildable area while avoiding disturbance to any existing wetlands within the 26.81 acre project site. A review of the environmental conditions on the site show wetlands are located on the periphery of the project site. In order to avoid any disturbance to wetland habitats or to plant and wildlife species associated with wetland habitats, the Tribe will meet or exceed wetland best management practices during the construction phase of the Project including applying a minimum 50' setback no-build zones for any seasonal wetlands or wetland swales and will impose a minimum 250' setback no-build zone for a vernal pool wetland. *See* **Exhibit 2: Wetland Buffer Map**. The Tribe will also prepare and implement a Storm Water Pollution Prevention Plan, perform a wetlands delineation and solicit a jurisdictional determination from the U.S. Army Corps of Engineers. The Storm Water Pollution Prevention Plan will identify the best management practices the Tribe will implement before, during, and after construction that will help mitigate impacts. Furthermore, this alternative will implement best management practices to avoid or mitigate disturbance to non-wetland wildlife habitat such as the burrowing owl. The construction of the proposed microgrid project is expected to commence outside the nesting period which will further reduce potential adverse impacts. If sensitive archaeological resources are discovered during excavation and construction activities, they will be evaluated by the Cultural Resources Manager and the Paskenta Cultural Committee. Furthermore, prior to construction the Tribe will conduct environmental awareness trainings for construction personnel.

B. No Mitigation Alternative

The No Mitigation Alternative would consist of proceeding with construction without implementing setbacks from the wetlands and obtain federal permits to fill any wetlands on an as needed basis. This alternative was eliminated from further consideration by the Tribe because it unnecessarily removes wetlands and adversely impacts plant and wildlife species.

C. No Action Alternative

The No Action Alternative would be to not construct the proposed Project and maintain the existing environmental conditions of the project site. There would be negligible environmental benefit to the off-Reservation environment from the No Action Alternative. With this alternative the environmental and energy conditions of the Tribe would not be changed or improved. The Tribe considers the No Action Alternative unacceptable since it does not further the Tribe's goal of energy security and environmental sustainability on the reservation.

VI. Description of Affected Environment

A. Site Characteristics and Land Cover

The Paskenta Indian Reservation is located in the eastern Coast Range and western Great Valley Geologic Provinces of Northern California in Tehama County, California. Comprising an area of

2,251 acres of rolling hills terrain, the Paskenta Indian Reservation is the ancestral home of the Nomlaki Indians. The casino and related infrastructure encompass approximately 320.71 acres on the Paskenta Indian Reservation in Tehama County.

The proposed Project is located entirely on the Paskenta Indian Reservation and the 26.81 acre site currently is undeveloped dominated by annual grassland habitat. The site location corresponds to a portion of Section 8, Township 23 North, and Range 03 East (Mount Diablo Base and Meridian) of the "Kirkwood, California" 7.5-minute quadrangle (U.S. Geological Survey [USGS] 1992). The topography is relatively level terrain at an elevational range of approximately 278 to 305 feet above mean sea level (MSL) in the Sacramento Valley region of California (Baldwin et al. 2012). Topography appears to be dominated by mounds and swales.

Figure 2: Elevation Map

The vegetation community present onsite is annual grassland consisting of both native and non-native species. Upland plant species observed include big heron bill (*Erodium botrys),* soft chess (*Bromus hordeaceus),* medusa head (*Elymus caput-medusae),* California goldfields (*Lasthenia californica),* and wild oats (*Avena sp.).* Aquatic features such as vernal pools, seasonal wetlands, and seasonal wetland swales were observed during a site reconnaissance visit on February 17, 2023. Wetland hydrology indicators were observed such as surface water, ponding signatures and biotic crusts. Vegetation species with a wetland indicator status of Facultative (FAC), Facultative Wet (FACW), or Obligate (OBL) in the *2020 National Wetland Plant List Arid West Region, version 3.5* were observed within the aquatic features within the Project (USACE 2020). Vegetation species observed include vernal pool buttercup (*Ranunculus bonariensis var. trisepalus:* OBL), Oregon woolly marbles (*Psilocarphus oregonus:* OBL), buck-horn plantain (*Plantago coronopus:* FAC), Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum:* FAC), and Italian rye grass (*Festuca perennis:* FAC). The Tribe will meet or exceed wetland best management practices during the construction phase of the Project including minimum 50' setback no-build zones for any seasonal wetlands or wetland swales and a minimum 250' setback no-build zone for the vernal pool wetland. During the detailed design phase, the Tribe intends to design the project to increase the setbacks and include larger setback no-build zones where possible.

B. Water Resources

The Project site is located within the Corning Subbasin of the Sacramento Valley Groundwater Basin, located within the Sacramento River Hydrologic Region (HR). The Corning Subbasin, with a surface area of 321 square miles, is located in the northern portion of the Sacramento Valley Groundwater Basin, spans portions of both Tehama and Glenn Counties and is identified in California's Groundwater Bulletin 118 as Groundwater Basin number 5-21.51. The Subbasin is bounded to the west by the Coast Range, to the north by Thomes Creek, to the east by the Sacramento River, and to the south by Stony Creek (DWR, 2006).

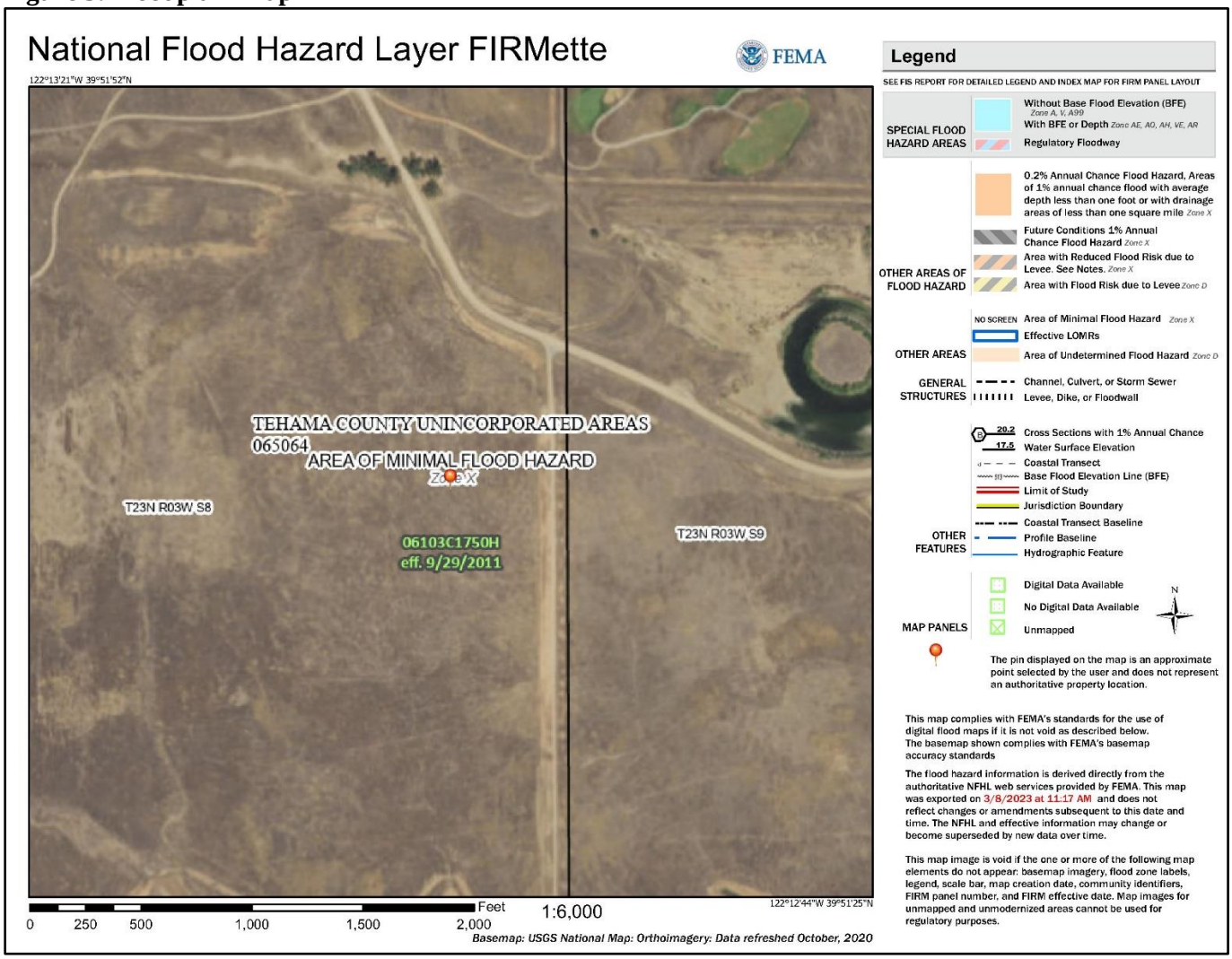
FIRM Panel 06103C1750H, effective September 29, 2011, indicates the Project site and surrounding areas are within Zone X. The Zone X designation (unshaded) is used for areas of minimal flood hazard, which are located outside the Special Flood Hazard Area (SFHA) and are at a higher elevation than the 0.2-percentannual-chance (or 500-year) flood.

Average annual precipitation in the Corning Subbasin ranges from 19 to 25 inches, increasing in average rainfall to the north. Rainfall generally travels as surface water to streams and rivers following each storm, then to water storage or the Pacific Ocean by way of the Sacramento River. Drainage areas in which significant amounts of snowfall occur tend to have more consistent stream water flows throughout the year than watersheds with little or no snowpack (Tehama County, 2008).

In the early 1900s, Tehama County relied on surface water for its primary water source; however, various factors, including population growth, changing land-use patterns, increased environmental water use, and water supply reliability, have increased the County's reliance on groundwater. In 1935, surface water supplies became available to areas in Tehama County west of the Sacramento River through authorization of the Central Valley Project (CVP) and construction of Shasta Dam and the Corning Canal (CDM, 2003). As of 2003, groundwater

sources contribute to the majority of the water supply for the County, followed by local surface water (DWR, 2003). Over 10,000 wells exist in Tehama County, with approximately 78-percent classified as domestic wells (Tehama County, 2008). The Project will not use groundwater resources.

Figure 3: Floodplain Map



C. Air Quality

The Clean Air Act of 1970 (CAA) (as amended 1977 and 1990, 42 U.S.C. 7401 et seq.) established national ambient air quality standards (NAAQS) and generally delegates the enforcement of these standards to the states. In California, the California Air Resources Board (CARB) is responsible for enforcing air pollution regulations. The CARB has, in turn, delegated the responsibility of regulating stationary emission sources to local air agencies (i.e. Tehama County Air Pollution Control District). Neither states nor the local air agencies have authority to enforce the CAA on Indian reservations. Tribes may work with the EPA to exercise authority for the management of air quality on their reservations through a variety of administrative processes; however, the EPA maintains primary authority over air quality standards on Inland reservations

unless the tribe has an approved Tribal Implementation Plan. The Project will not impact local air quality.

D. Biological Resources

The Biological Review Technical Memorandum included a desktop habitat assessment. Following, consultation with the CEC, the Tribe examined a list of five additional wildlife species and 20 plant species of interest in California using aerial imagery, biological resource databases and site reconnaissance. Site visit surveys were also conducted and found habitat elements exist for the burrowing owl, western spadefoot and hydrophytes plant species associated with wetlands. The western spadefoot is not listed as an endangered or threatened species under tribal, federal or California law, but is listed as a Species of Special Concern under California law. If any western spadefoot are detected on Site they will be relocated to suitable habitat. Similarly, the burrowing owl is not listed as an endangered or threatened species under tribal, federal or California law, but is listed as a Species of Special Concern under California law. ECORP Consulting conducted an initial survey and did not discover any burrowing owls present on-Site. However, the Tribe will conduct additional burrowing owl surveys before construction. Furthermore, prior to construction the Tribe will conduct environmental awareness trainings for construction personnel.

After conducting an on-site biological review, ECORP concluded that given the Site conditions, any rare plant species having a potential to occur on the Site would be limited to the vernal pool, seasonal wetlands, and seasonal wetland swales and that the proposed 50' buffer would be sufficient to avoid impacts to these identified rare plant species, should they occur on-Site. As described above, the Project will implement an avoidance mitigation approach by applying a minimum 50' and 250' buffer 'no-build zone' around these aquatic features. Regardless of the size of the buffer, the Tribe will also implement the following mitigation measures, which are identified in ECORP Consulting's Biological Review Technical Memorandum: Bio-5, Bio-6, and Bio-7. If impacts to buffered aquatic features cannot be avoided, which the Tribe does not expect, the Tribe would also implement Bio-3 and Bio-4. During construction visual markers will be installed to delineate the setback boundaries. Also, a pre-construction survey of burrowing owl habitats will be conducted prior to Project initiation and will include methods, results and recommendations for avoidance and minimization measures.

VII. Cultural Resources

The Project is located in the traditional territory of the Nomlaki; more specifically the Nomlaqa Boda of the Hill Nomlaki. Nomlaki is the name of the dialect spoken by the people. Nomlaki is itself a dialect of the Wintuan language and closely related to Wintu and Patwin, dialects/groups that border Nomlaki to the north and south. Almost all ethnographic information on the Nomlaki comes from individuals belonging to the Hill Nomlaki, primarily from the writings of Walter Goldschmidt in "Nomlaki Ethnography" (1951). The Nomlaki inhabited the foothill area extending from the edge of the river plain westward to the summit of the Coast Range, in the Tehama Country between Stony Creek and Cottonwood Creek, and in the Sacramento River drainage of central California. It is believed that a century ago the Nomlaki may have numbered more than two thousand individuals; today only a remnant survives.

Pursuant to the NHPA (50 U.S.C. 300101 et seq.) agencies and tribes are to identify and consider the adverse effect their proposed project may have on the historic and prehistoric resources in the Area of Potential Effect (APE). The Paskenta Cultural Committee advises the Tribal Council on issues regarding the Nomlaki landscape including cultural resources. The purpose of the committee is to preserve and protect traditional lands, sacred sites, including landscapes and culturally related practices throughout the Paskenta aboriginal territory. The Cultural Committee on behalf of the Tribe carries on consultation with agencies and developers as prescribed by cultural preservation laws and carries out a cultural monitoring program where cultural monitors work alongside Federal, State, County, City agencies in order to ensure the preservation of Paskenta's cultural resources. The cultural monitors play a vital role in preserving culturally sensitive areas by working together with said entities before and during construction and development on traditional lands.

The Project APE is within the (historic) village of *Luiko* and in the close vicinity of the village of *Paskenti.* There was a major village named *Tehemet* east of the project area where Elder Creek joins the Sacramento River. Previous archeological inspections of the area have not disclosed the presence of cultural resources. If sensitive archaeological resources are discovered during excavation and construction activities, they will be evaluated by the Cultural Resources Manager and the Paskenta Cultural Committee. Work should be suspended in the study area, until such time the archaeologist and the Paskenta Cultural Committee can complete an assessment of the significance of the find and make recommendations regarding the specific mitigations required, if necessary as determined by the Paskenta Cultural Committee.

VIII. Land Use Plans

The majority of the reservation land is held in trust for the benefit of the Tribe and is used primarily for economic purposes and governmental offices. The Tribe currently does not have a written land-use plan. Physically, Tehama County covers a total of approximately 2,951 square miles of land (or 1,892,572 acres). The Tehama County General Plan Planning Area, which is the private land in Tehama County for which the County has jurisdiction, covers approximately 1,394,384 acres. The 2,251 acres that comprise the Paskenta Indian Reservation lands for which the County government has no land-use authority represents 0.10% of the total Tehama County land base. The Tehama County Zoning Ordinance implements the goals and policies of the County's General Plan. It establishes zoning districts that guide the development and use of land within the County by defining allowable land uses within each district. None of the chapters of the Tehama County Zoning Ordinance apply to Paskenta Tribal lands and a special land use designation of "Nomlaki" by the County confirms land use designations as Tribal lands.

IX. Cumulative Impacts

NEPA and CEQA guidance documents, which the Tribe considers to be instructive, require the evaluation of environmental consequences including cumulative impacts. Cumulative impacts are broadly defined as those that "result from the incremental impacts of an action when added to other past and reasonably foreseeable future actions" (40 CFR 1508.7). Cumulative impacts by their nature can be difficult to identify and quantify. This section accounts for past actions within the Paskenta Band of Nomlaki, and factors in the foreseeable future as well as the direct

consequences of a proposed action. The construction of the proposed Project on the subject parcels is contemplated as a future action.

Development of the proposed Project under the Proposed Action Alternative (Preferred Alternative) will not result in any adverse impacts to biological resources on or off the reservation including adjacent wetland habitats or plant and wildlife species associated with wetland habitats. The Preferred Alternative will also not have any negative impact to water and air resources. In fact, the Project will reduce overall carbon emissions associated with serving the Tribe's electric loads following the completion of the planned microgrid. If cultural resources are discovered during construction, the Tribe will cease construction activities and perform an assessment of the resources and implement appropriate mitigation strategies in accordance with the Cultural Resources Manager and Cultural Resources Committee.

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

March 15, 2023
2023-033

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RE: Biological Review Technical Memorandum for the Proposed Paskenta Band of Nomlaki Tribe Microgrid Energy Project in Tehama County, California

1.0 INTRODUCTION

At the request of Mr. Adam Harvey, ECORP Consulting, Inc. prepared this Biological Review Technical Memorandum (TM) for the proposed Paskenta Band of Nomlaki Tribe Microgrid Energy Project (Project) located in Tehama County, California. The Tepa Companies (Client) is proposing to develop a solar field and battery storage facility on an approximately 26.81-acre undeveloped parcel (Area of Interest, AOI) located within the Paskenta Rancheria in Tehama County, California.

1.1 Project Location

The approximately 26.81-acre AOI is located southwest of Rolling Hills Casino and Resort within the Paskenta Rancheria. The AOI corresponds to a portion of Section 8, Township 23 North, and Range 03 East (Mount Diablo Base and Meridian) of the "Kirkwood, California" 7.5-minute quadrangle (U.S. Geological Survey [USGS] 1992). The approximate center of the AOI is located at 39.860057° latitude and -122.217797° longitude within the Big Chico Creek-Sacramento River Watershed (Hydrologic Unit Code #18020157; Natural Resources Conservation Service [NRCS], USGS, and U.S. Environmental Protection Agency [USEPA] 2016.). Purpose of this Biological Review Technical Memorandum

The purpose of this Biological Review TM is to summarize the results from ECORP's completion of a desktop review of the potential for the AOI to support five wildlife species and 20 plant species of interest (referred to as "Target Species" from here forward) identified by the Client, and the results of two site visit conducted to record current site conditions, land cover types, and the potential presence of two target species. Photographs were taken of the AOI land covers and site features.

This analysis does not include the results of determinate field surveys for special-status plant and wildlife species, or an aquatic resources delineation performed according to formal protocols.

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2.0 METHODS

2.1 Desktop Analysis of Special-Status Species

The Client provided ECORP with a list of five (5) wildlife and 20 plant Target Species and directed ECORP to assess the potential of the AOI to support any of the Target Species using commercially available aerial imagery and commonly used biological resource databases. These databases were:

- California Natural Diversity Database (CNDDB) record search for the "Kirkwood, California" 7.5-minute U.S. Geological Survey (USGS) topographic quadrangle and the eight surrounding USGS quadrangles (CDFW 2023).
- California Native Plant Society species list the "Kirkwood, California" 7.5-minute quadrangle and the surrounding eight quadrangles.
- U.S. Fish and Wildlife Service (USFWS Information, Planning, and Consultation System Resource Report List for the AOI (USFWS 2023a).

2.2 Site Reconnaissance

2.2.1 Habitat Assessment

ECORP Staff Biologist Dan Machek conducted a site reconnaissance visit on February 17, 2023, to assess habitat conditions for Target Species with a potential to occur within the AOI. In addition, unique and/ or biologically important site features (e.g., aquatic features, potential burrowing owl burrows, etc.) were photographed and their locations were recorded using a sub-meter Global Position System (GPS) unit.

2.2.2 Focused Surveys

A follow up site visit was conducted by Mr. Machek and ECORP Associate Biologist Aly Johnson on March 8, 2023 that included focused surveys for burrowing owl (*Athene cunicularia*) and western spadefoot (*Spea hammondii*) and their habitat elements to further inform the recommendations for Project avoidance and minimization measures.

2.2.2.1 Burrowing Owl

ECORP biologists Dan Machek and Aly Johnson conducted a western burrowing owl transect survey of the AOI on March 8, 2023 from 8:15 am to 11:00 am. The biologists walked parallel transects within the AOI spaced 15 meters apart and were aided with binoculars. The biologists recorded weather conditions and any observations of individuals, potential burrows, burrowing owl sign (whitewash, pellets, or insect parts), and the occupancy status of potential burrows. Formal survey protocols from burrowing owls established by CDFW were not implemented during this effort.

2.2.2.2 Western Spadefoot

Mr. Machek conducted a western spadefoot daytime visual encounter survey (VES) and nighttime eye-shine and audio detection survey of the AOI on March 8, 2023. Weather conditions were recorded. The daytime VES was conducted from 3:15 pm to 4:00 pm to coincide with the warmest part of the day. Mr. Machek surveyed the aquatic features within the AOI for all life stages of western spadefoot, and 500 feet surrounding the aquatic features for adult and juvenile western spadefoot. Mr. Machek used binoculars to scan ahead for individuals and polarized glasses to assist visually scanning into the water for all life stages of western spadefoot. No dip netting was conducted to avoid potential by-catch of non-target species.

After sunset, Mr. Machek conducted the nighttime eye-shine and audio detection survey from 6:38 pm to 8:00 pm. He positioned himself in proximity to the aquatic features and listened for calls from male western spadefoots. After a period of listening, he used a flashlight and binoculars to scan for the eye-shine of individuals at a distance. After scanning from a distance, he approached the aquatic features to visually scan at a closer distance for individuals. He then repositioned himself near the next set of aquatic features and repeated the process.

2.3 Evaluation of Special-Status Species

Target Species are identified and evaluated in Section 3.3. of this TM. The potential for Target Species to occur in the AOI was evaluated based on their natural history, occurrence information from the database review, and the site-reconnaissance habitat assessment visit. Target Species were assigned to one of the following categories with respect to their potential to occur in the AOI:

- **Present** - Species is known to occur within the AOI based on documented occurrences within the queried databases.
- **Potential to Occur** - Habitat for the species occurs within the AOI and the species has been documented to occur in the vicinity of the AOI.
- **Low Potential to Occur** - Low quality and/or quantity of suitable habitat is present in the AOI, and/or the species is not known to occur within the vicinity of the AOI based on queried databases.
- **Absent** - No suitable habitat occurs in the AOI and/or the species is not known to occur in the vicinity of the AOI based on queried databases.

3.0 RESULTS

3.1 Site Characteristics and Land Use

The AOI is undeveloped and is dominated by annual grassland habitat. The AOI occurs on gently sloped terrain at an elevational range of approximately 278 to 305 feet above mean sea level (MSL) in the Sacramento Valley region of California (Baldwin et al. 2012). Topography is dominated by mounds and swales.

Aquatic features were observed within the AOI during the February 17, 2023 site reconnaissance visit. Wetland hydrology indicators were observed such as surface water, ponding signatures, and biotic crusts. A further discussion of AOI aquatic features is presented in Section 3.3.

3.2 Vegetation Communities

The vegetation community within the AOI is annual grassland consisting of both native and non-native species. Upland plant species observed include big heron bill (*Erodium botrys*), soft chess (*Bromus hordeaceus*), medusa head (*Elymus caput-medusae*), California goldfields (*Lasthenia californica*), and wild oats (*Avena* sp.).

Vegetation species with a wetland indicator status of Facultative (FAC), Facultative Wet (FACW), or Obligate (OBL) in the *2020 National Wetland Plant List Arid West Region, version 3.5* were observed within the aquatic features within the AOI (USACE 2020). Classifications of wetland-associated plant species are included in Table 1. A photo point map is included in Appendix A that corresponds with representative AOI photos in Appendix B for reference.

Table 1. Classification of Wetland-Associated Plant Species[1]

Plant Species Classification	Abbreviation	Probability of Occurring in Wetland
Obligate	OBL	Almost always occur in wetlands
Facultative Wetland	FACW	Usually occur in wetlands, but may occur in non-wetlands
Facultative	FAC	Occur in wetlands and non-wetlands
Facultative Upland	FACU	Usually occur in non-wetlands, but may occur in wetlands
Upland	UPL	Almost never occur in wetlands
Plants That Are Not Listed (assumed upland species)	N/L	Does not occur in wetlands in any region.

[1]Source: USACE 2020

3.3 Potential Waters of the U.S.

Potentially U.S. Army Corps of Engineers (USACE) jurisdictional vernal pools, seasonal wetlands, and seasonal wetland swales were observed within the AOI during the February 17, 2023 site reconnaissance visit. The preliminary extent of the potential Waters of the U.S. was mapped using a submeter Global Positioning System (GPS) on March 3, 2023 (Figure 1). Aquatic features observed are described below.

3.3.1 Seasonal Wetlands

Seasonal wetlands are ephemerally wet due to accumulation of surface runoff and rainwater within low-lying areas. Inundation periods tend to be relatively short and are commonly dominated by non-native annual and sometimes perennial hydrophytic (water-loving) species. There are small seasonal wetlands within the seasonal wetland swales in the southern and central portion of the AOI. One larger seasonal wetland occurs in the northeast portion of the AOI. One small seasonal wetland occurs in the eastern portion of the AOI.

3.3.2 Seasonal Wetland Swales

Seasonal wetland swales are linear wetland features that do not exhibit an ordinary high water mark (OHWM). The seasonal wetland swales onsite follow topographic drainages and flow toward the southern portion of the AOI.

3.3.3 Vernal Pools

Vernal pools are ephemerally wet due to accumulation of surface runoff and rainwater within concave pool-like depressions. Inundation periods tend to be relatively short and are dominated by species typically only found in vernal pools, non-native annual and sometimes perennial hydrophytic species. There is one moderate-sized vernal pool located in the southeast portion of the AOI.

3.4 Evaluation of Target Species

Based on the CNDDB query, there are no previously documented occurrences of Target Species within the AOI (CDFW 2023). However, several occurrences of Target Species have been documented within the vicinity of the AOI. Each of the Target Species and its potential to occur is summarized in Table 2. Twelve of the 25 Target Species were determined to have the potential to occur in the AOI and are described in more detail below. Thirteen of the 25 Target Species are considered absent in the AOI. Most target species (and all target plant species) with the potential to occur in the AOI are associated with aquatic features/habitats.

Table 2. Potential for Occurrence of Target Species

Common Name (*Scientific Name*)	Status			Habitat Description	Potential To Occur Onsite
	FESA	CESA	Other		
Plants					
Henderson's bent grass *(Agrostis hendersonii)*	--	--	3.2	Vernal pools and mesic areas in valley and foothill grasslands. Elevation: 230'–1,000' Bloom Period: April–June	**Potential to Occur.** The vernal pools, seasonal wetlands and swales within the AOI are suitable habitat. No CNDDB occurrences within 5 miles of the AOI.
Depauperate milk–vetch (*Astragalus pauperculus*)	--	--	4.3	Occurs within vernally mesic and volcanic soils in chaparral, cismontane woodland, and valley and foothill grasslands. Elevation: 195'–3,985' Bloom Period: March–June	**Absent.** There is no suitable habitat within the AOI. No CNDDB occurrences within 5 miles of the AOI.

Table 2. Potential for Occurrence of Target Species					
Common Name (*Scientific Name*)	**Status**			**Habitat Description**	**Potential To Occur Onsite**
	FESA	**CESA**	**Other**		
Pink creamsacs *(Castilleja rubicundula* var. *rubicundula)*	--	--	1B.2	Serpentine substrates in chaparral openings, cismontane woodland, meadows and seeps, and valley and foothill grassland. Elevation: 65'–2,985' Bloom Period: April–June	**Absent.** There is no suitable habitat within the AOI. No CNDDB occurrences within 5 miles of the AOI.
Silky cryptantha (*Cryptantha crinita*)	--	--	1B.2	Gravelly streambeds of cismontane woodland, lower montane coniferous forest, riparian forest, riparian woodland, and valley and foothill grassland habitats. Elevation: 200'–3,985' Bloom Period: April–May	**Absent.** There is no suitable habitat within the AOI. No CNDDB occurrences within 5 miles of the AOI.
Dwarf downingia *(Downingia pusilla)*	--	--	2B.2	Mesic areas in valley and foothill grassland, and vernal pools. Species has also been found in disturbed areas such as tire ruts and scraped depressions (CDFW 2021[1]). Elevation: 5'–1,460' Bloom Period: March–May	**Potential to Occur.** The vernal pools, seasonal wetlands and swales within the AOI are suitable habitat. There are 5 CNDDB occurrences within 5 miles of the AOI.
Hoover's spurge (*Euphorbia hooveri*)	FT	--	1B.2	Vernal pools. Elevation: 80'–820' Bloom Period: July–September	**Potential to Occur.** The vernal pools, seasonal wetlands and swales within the AOI are suitable habitat. No CNDDB occurrences within 5 miles of the AOI.

Table 2. Potential for Occurrence of Target Species					
Common Name (*Scientific Name*)	**Status**			**Habitat Description**	**Potential To Occur Onsite**
	FESA	**CESA**	**Other**		
Stony Creek spurge *(Euphorbia ocellata* ssp. *rattanii)*	--	--	1B.2	Chaparral, streambanks of riparian scrub, and sandy or rocky substrates of valley and foothill grassland. Elevation: 215'–2,625' Bloom Period: May–October	**Absent.** There is no suitable habitat within the AOI. There are 4 CNDDB occurrences within 5 miles of the AOI.
Adobe lily *(Fritillaria pluriflora)*	--	--	1B.2	Adobe soils in chaparral, cismontane woodland, and valley and foothill grassland. Elevation: 195'–2,315' Bloom Period: February–April	**Absent.** There is no suitable habitat within the AOI. No CNDDB occurrences within 5 miles of the AOI.
Boggs Lake hedge–hyssop *(Gratiola heterosepala)*	--	CE	1B.2	Marshes, swamps, lake margins, and vernal pools. Elevation: 35'–7,790' Bloom Period: April–August	**Potential to Occur.** The vernal pools, seasonal wetlands and swales within the AOI are suitable habitat. There is 1 CNDDB occurrences within 5 miles of the AOI.
Hogwallow starfish *(Hesperevax caulescens)*	--	--	4.2	Sometimes alkaline in mesic areas with clay soil within valley and foothill grassland and shallow vernal pools. Elevation: 0'–1,655' Bloom Period: March–June	**Absent.** There is no suitable habitat within the AOI. No CNDDB occurrences within 5 miles of the AOI.
Red Bluff dwarf rush *(Juncus leiospermus* var. *leiospermus)*	--	--	1B.1	Vernally mesic areas in chaparral, cismontane woodland, meadows and seeps, valley and foothill grassland, and vernal pools. Elevation: 115'–4,100' Bloom Period: March–June	**Potential to Occur.** The vernal pools, seasonal wetlands and swales within the AOI are suitable habitat. There are 3 CNDDB occurrences within 5 miles of the AOI.

Table 2. Potential for Occurrence of Target Species					
Common Name (*Scientific Name*)	**Status**			**Habitat Description**	**Potential To Occur Onsite**
	FESA	**CESA**	**Other**		
Legenere *(Legenere limosa)*	--	--	1B.1	Various seasonally inundated areas including wetlands, wetland swales, marshes, vernal pools, artificial ponds, and floodplains of intermittent drainages (USFWS 2005[2]). Elevation: 5'–2,885' Bloom Period: April–June	**Potential to Occur.** The vernal pools, seasonal wetlands and swales within the AOI are suitable habitat. There is 1 CNDDB occurrences within 5 miles of the AOI.
Tehama navarretia (*Navarretia heterandra*)	--	--	4.3	Mesic areas in valley and foothill grassland and vernal pools. Elevation: 100'–3,315' Bloom Period: April–June	**Potential to Occur.** The vernal pools, seasonal wetlands and swales within the AOI are suitable habitat. No CNDDB occurrences within 5 miles of the AOI.
Baker's navarretia *(Navarretia leucocephala* ssp. *bakeri)*	--	--	1B.1	Vernal pools and mesic areas within cismontane woodlands, lower montane coniferous forests, meadows and seeps, and valley and foothill grasslands. Elevation: 15'–5,710' Bloom Period: April–July	**Potential to Occur.** The vernal pools, seasonal wetlands and swales within the AOI are suitable habitat. There is 1 CNDDB occurrences within 5 miles of the AOI.
Adobe navarretia *(Navarretia nigelliformis* ssp. *nigelliformis)*	--	--	4.2	Clay and sometimes serpentine soils in vernally mesic valley and foothill grasslands and sometimes in vernal pools. Elevation: 330'–3,280' Bloom Period: April–June	**Absent.** There is no suitable habitat within the AOI. No CNDDB occurrences within 5 miles of the AOI.

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Table 2. Potential for Occurrence of Target Species					
Common Name (*Scientific Name*)	**Status**			**Habitat Description**	**Potential To Occur Onsite**
	FESA	**CESA**	**Other**		
Hairy Orcutt grass *(Orcuttia pilosa)*	FE	CE	1B.1	Vernal pools. Elevation: 150'–655' Bloom Period: May–September	**Low Potential to Occur.** The vernal pools and seasonal wetlands within the AOI are marginally suitable habitat. No CNDDB occurrences within 5 miles of the AOI.
Slender Orcutt grass *(Orcuttia tenuis)*	FT	CE	1B.1	Vernal pools, often gravelly. Elevation: 115'–5,775' Bloom Period: May–September	**Low Potential to Occur.** The vernal pools and seasonal wetlands within the AOI are marginally suitable habitat. No CNDDB occurrences within 5 miles of the AOI.
Ahart's paronychia (*Paronychia ahartii*)	--	--	1B.1	Well–drained, rocky outcrops, often vernal pool edges, and volcanic upland (Hartman and Rabeler 2012[3]) of cismontane woodland, valley and foothill grassland, and vernal pools. Elevation: 100'–1,675' Bloom Period: February–June	**Low Potential to Occur.** The vernal pools and seasonal wetlands within the AOI are marginally suitable habitat. There are 4 CNDDB occurrences within 5 miles of the AOI.
Greene's tuctoria *(Tuctoria greenei)*	FE	CR	1B.1	Vernal pools. Elevation: 100'–3,510' Bloom Period: May–July	**Low Potential to Occur.** The vernal pools and seasonal wetlands within the AOI are marginally suitable habitat. No CNDDB occurrences of the species within 5 miles of the AOI.
Brazilian watermeal *(Wolffia brasiliensis)*	--	--	2B.3	Assorted shallow freshwater marshes and swamps. Elevation: 65'–330' Bloom Period: April–December	**Absent.** There is no suitable habitat within the AOI. No CNDDB occurrences within 5 miles of the AOI.
Amphibians					

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Table 2. Potential for Occurrence of Target Species					
Common Name (*Scientific Name*)	**Status**			**Habitat Description**	**Potential To Occur Onsite**
	FESA	**CESA**	**Other**		
Western spadefoot (*Spea hammondii*)	-	-	SSC	California endemic species of vernal pools, swales, wetlands and adjacent grasslands throughout the Central Valley.	**Potential to Occur.** There is suitable breeding and aestivation habitat onsite within the aquatic features. Two CNDDB occurrences are documented near the AOI.
Birds					
White-tailed kite (*Elanus leucurus*)	-	-	CFP	Nesting occurs within trees in low elevation grassland, agricultural, wetland, oak woodland, riparian, savannah, and urban habitats.	**Absent**. No suitable nesting habitat is present within the AOI.
American peregrine falcon (*Falco peregrinus anatum*)	De-listed	De-listed	CFP	In California, breeds in coastal region, northern California, and Sierra Nevada. Nesting habitat includes cliff ledges and human-made ledges on towers and buildings. Wintering habitat includes areas where there are large concentrations of shorebirds, waterfowl, pigeons or doves. CA Residents nest in February-June	**Absent**. No potential suitable nesting habitat is present within the AOI.
Swainson's hawk (*Buteo swainsoni*)	-	CT	BCC	Nesting occurs in trees in agricultural, riparian, oak woodland, scrub, and urban landscapes. Forages over grassland, agricultural lands, particularly during disking/harvesting, irrigated pastures	**Absent**. No suitable nesting habitat is present within the AOI. No CNDDB occurrences of nesting Swainson's hawk within 10 miles of the AOI within the last 5 years.

Table 2. Potential for Occurrence of Target Species					
Common Name (*Scientific Name*)	**Status**			**Habitat Description**	**Potential To Occur Onsite**
	FESA	**CESA**	**Other**		
Burrowing owl *(Athene cunicularia)*	-	-	BCC, SSC	Nests in burrows or burrow surrogates in open, treeless, areas within grassland, steppe, and desert biomes. Often with other burrowing mammals (e.g., prairie dogs, California ground squirrels). May also use human-made habitat such as agricultural fields, golf courses, cemeteries, roadside, airports, vacant urban lots, and fairgrounds.	**Potential to Occur.** Suitable burrowing habitat is present within the AOI. Two CNDDB occurrences within 5 miles of the AOI occur to the north and south.

Status Codes:

FESA	Federal Endangered Species Act
CESA	California Endangered Species Act
FE	FESA listed, Endangered
FT	FESA listed, Threatened
BCC	USFWS Bird of Conservation Concern (USFWS 2008).
CE	CESA or NPPA listed, Endangered
CT	CESA- or NPPA-listed, Threatened.
CFP	California Fish and Game Code Fully Protected Species (§ 3511-birds, § 4700-mammals, §5050-reptiles/amphibians).
CR	CESA or NPPA listed, Rare
SSC	California Species of Special Concern
Delisted	Removed from ESA or CESA list

3.4.1 Plants

Twenty species of plants were identified by the client as Target Species based on a CNPS database query to review the potential to occur within the AOI (Table 2). However, upon further analysis and after the site visit, ten species were determined to be absent from the AOI due to a lack of suitable habitat within the AOI. No further discussion of these species is provided in this analysis. Brief descriptions of the remaining ten species that have the potential to occur within the AOI are presented below.

3.4.1.1 Henderson's Bent Grass

Henderson's bent grass (*Agrostis hendersonii*) is not listed pursuant to either the federal or California ESAs but is designated as a CRPR 3.2 species. This species is an herbaceous annual that occurs in vernal pools and in mesic areas in valley and foothill grasslands. Henderson's bent grass blooms from April through June and is known to occur at elevations between 230 to 1,000 feet above MSL. The

current range of this species in California includes Butte, Calaveras, Merced, Napa, Shasta, Tehama, and Tuolumne counties; occurrence in Butte County confirmed, but possible extirpated (CNPS 2023).

There are no CNDDB occurrences of Henderson's bent grass within 5 miles of the AOI (CDFW 2023). Aquatic features occurring onsite are suitable habitat for the species. Henderson's bent grass has potential to occur in association with aquatic habitats within the AOI.

3.4.1.2 Dwarf Downingia

Dwarf downingia (*Downingia pusilla*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 2B.2 species. This species is an herbaceous annual that occurs in vernal pools and mesic areas of valley and foothill grasslands. Dwarf downingia has also been found in manmade features such as tire ruts, scraped depressions, stock ponds, and roadside ditches. This species blooms from March through May and is known to occur at elevations ranging from 5 to 1,460 feet above MSL. The current range of this species in California includes Fresno, Merced, Napa, Placer, Sacramento, San Joaquin, Solano, Sonoma, Stanislaus, Tehama, and Yuba counties (CNPS 2023).

There are five CNDDB occurrences of dwarf downingia within 5 miles of the AOI (CDFW 2023). Aquatic features occurring onsite are suitable habitat for the species. Dwarf downingia has potential to occur in association with aquatic habitats within the AOI.

3.4.1.3 Hoover's Spurge

Hoover's spurge (*Euphorbia hooveri)* is listed as threatened pursuant to the federal ESA, not listed pursuant to the California ESA, and is designated as a CRPR 1B.2 species. This species is an herbaceous annual that occurs in vernal pools. Hoover's spurge blooms from July through September (sometimes October) and is known to occur at elevations ranging from 80 to 820 feet above MSL. Hoover's spurge is endemic to California; its current range includes Butte, Glenn, Merced, Stanislaus, Tehama, and Tulare counties (CNPS 2023).

There are no CNDDB occurrences of Hoover's spurge within 5 miles of the AOI (CDFW 2023). Aquatic features occurring onsite are suitable habitat for the species. Hoover's spurge has potential to occur in association with aquatic habitats within the AOI.

3.4.1.4 Boggs Lake Hedge-Hyssop

Boggs Lake hedge-hyssop (*Gratiola heterosepala*) is not listed pursuant to the federal ESA, is listed as endangered pursuant to the California ESA, and is designated as a CRPR 1B.2 species. This species is an herbaceous annual that occurs in clay in marshes and swamps (lake margins), and vernal pools. Boggs Lake hedge-hyssop blooms from April through August and is known to occur at elevations ranging from 35 to 7,790 feet above MSL. The current range of this species in California includes Fresno, Lake, Lassen, Madera, Mendocino, Merced, Modoc, Placer, Sacramento, Shasta, Siskiyou, San Joaquin, Solano, Sonoma, and Tehama counties (CNPS 2023).

There is one CNDDB occurrence of Boggs lake hedge hyssop within 5 miles of the AOI (CDFW 2023). Aquatic features occurring onsite are suitable habitat for the species. Boggs lake hedge hyssop has potential to occur in association with aquatic habitats within the AOI.

3.4.1.5 Red Bluff Dwarf Rush

Red Bluff dwarf rush (*Juncus leiospermus* var. *leiospermus*) is not listed pursuant to either the federal ESA or California ESA, but is designated as a CRPR 1B.1 species. This species is an herbaceous annual that occurs in vernally mesic areas in chaparral, cismontane woodland, meadows, seeps, valley and foothill grasslands, and vernal pools. Red Bluff dwarf rush blooms from March through June and is known to occur at elevations ranging from 115 to 4,100 feet above MSL. Red Bluff dwarf rush is endemic to California; the current range of this species includes Butte, Placer, Shasta, and Tehama counties (CNPS 2023).

There are three CNDDB occurrences of Red Bluff dwarf rush within 5 miles of the AOI (CDFW 2023). Aquatic features occurring onsite are suitable habitat for the species. Red Bluff dwarf rush has potential to occur in wet areas within the AOI.

3.4.1.6 Legenere

Legenere (*Legenere limosa*) is not listed pursuant to either the federal or California ESAs but is designated as a CRPR 1B.1 species. This species is an herbaceous annual that occurs in a variety of seasonally inundated environments including wetlands, wetland swales, marshes, vernal pools, artificial ponds, and floodplains of intermittent drainages (USFWS 2005). Legenere blooms from April through June and is known to occur at elevations ranging from 5 feet to 2,885 feet above MSL. Legenere is endemic to California; the current range of this species includes Alameda, Lake, Monterey, Napa, Placer, Sacramento, Santa Clara, San Joaquin, Shasta, San Mateo, Solano, Sonoma, Stanislaus, Tehama, and Yuba counties. It is believed to be extirpated from Stanislaus County (CNPS 2023).

There is one CNDDB occurrence of legenere within 5 miles of the AOI (CDFW 2023). Aquatic features occurring onsite are suitable habitat for the species. Legenere has potential to occur within the AOI.

3.4.1.7 Tehama Navarretia

Tehama navarretia (*Navarretia heterandra*) is not listed pursuant to either the federal or California ESAs but is designated as a CRPR 4.3 species. This species is an herbaceous annual that occurs in mesic areas in valley and foothill grassland and vernal pools. Tehama navarretia blooms from April through June and is known to occur at elevations ranging from 100 to 3,315 feet above MSL. The current range for Tehama navarretia in California includes Butte, Contra Costa, El Dorado, Napa, Shasta, Sonoma, and Tehama counties (CNPS 2023).

There are no CNDDB occurrences of Tehama navarretia within 5 miles of the AOI (CDFW 2023). Aquatic features occurring onsite are suitable habitat for the species. Tehama navarretia has potential to occur within the AOI.

3.4.1.8 Baker's Navarretia

Baker's navarretia (*Navarretia leucocephala* ssp. *bakeri*) is not listed pursuant to either the federal or California ESAs but is designated as a CRPR 1B.1 species. This species is an herbaceous annual that occurs in vernal pools and mesic areas within cismontane woodlands, lower montane coniferous forests, meadows and seeps, and valley and foothill grasslands. Baker's navarretia blooms from April through July and is known to occur at elevations ranging from 15 to 5,710 feet above MSL. Baker's navarretia is endemic to California; the current range of this species includes Colusa, Glenn, Humboldt, Lake, Lassen, Mendocino, Marin, Napa, Solano, Sonoma, Sutter, Tehama, and Yolo counties (CNPS 2023).

There is one CNDDB occurrence of Baker's navarretia within 5 miles of the AOI (CDFW 2023). Aquatic features occurring onsite are suitable habitat for the species. Baker's navarretia has potential to occur within the AOI.

3.4.1.9 Hairy Orcutt Grass

Hairy Orcutt grass (*Orcuttia pilosa*) is listed endangered pursuant to both the federal and California ESAs, and is designated as a CRPR 1B.1 species. This species is an herbaceous annual that occurs in vernal pools. Hairy Orcutt grass blooms from May through September and is known to occur at elevations ranging from 150 to 655 feet above MSL. Hairy Orcutt grass is endemic to California; the current range of this species includes Glenn, Madera, Merced, Stanislaus, and Tehama counties (CNPS 2023).

There are no CNDDB occurrences of Hairy Orcutt grass within 5 miles of the AOI (CDFW 2023). The seasonal wetlands and vernal pool occurring onsite are marginally suitable habitat for the species. Hairy Orcutt grass has a low potential to occur within the AOI.

3.4.1.10 Slender Orcutt Grass

Slender Orcutt grass (*Orcuttia tenuis*) is listed as threatened pursuant to the federal ESA, as endangered pursuant to the California ESA, and is designated as a CRPR 1B.1 species. This species is an herbaceous annual that occurs in often gravelly soils in vernal pools primarily on substrates of volcanic origin (Crampton 1959; Corbin and Schoolcraft 1989; as cited in USFWS 2005). This species is known to occur in the same type of vernal pool complexes as Sacramento Orcutt grass in Sacramento County; however, these species have not been observed co-existing in the same vernal pool (USFWS 2005). The median area of pools occupied by populations studied by Stone et al. (1988, as cited in USFWS 2005) was 1.6 acres and ranged from 0.2 to 111.0 acres (USFWS 2005). Slender Orcutt grass blooms from May through September (sometimes October) and is known to occur at elevations ranging from 115 to 5,775 feet above MSL. Slender Orcutt grass is endemic to California; the current range for this species includes Butte, Lake, Lassen, Modoc, Plumas, Sacramento, Shasta, Siskiyou, and Tehama counties (CNPS 2023).

There are no CNDDB occurrences of slender Orcutt grass within 5 miles of the AOI (CDFW 2023). The seasonal wetlands and vernal pool occurring onsite are marginally suitable habitat for the species. Slender Orcutt grass has a low potential to occur within the AOI.

3.4.1.11 Ahart's Paronychia

Ahart's paronychia (*Paronychia ahartii*) is not listed as pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.1 species. Ahart's paronychia is an annual herb that occurs in cismontane woodland, valley foothill and grassland and vernal pools. Ahart's paronychia blooms from February through June and is known to occur at elevations ranging from 100 to 1,675 feet above MSL. Ahart's paronychia is endemic to California; the current range of this species includes Butte, Shasta, and Tehama counties (CNPS 2023).

There are four CNDDB occurrences of Ahart's paronychia within 5 miles of the AOI (CDFW 2023). The seasonal wetlands and vernal pool occurring onsite are marginally suitable habitat for the species. Ahart's paronychia has a low potential to occur within the AOI.

3.4.1.12 Greene's Tuctoria

Greene's tuctoria (*Tuctoria greenei*) is listed endangered pursuant to the federal ESA, listed as rare pursuant to the California ESA, and is designated as a CRPR 1B.1 species. This species is an herbaceous annual that occurs in vernal pools. Greene's tuctoria blooms from May through July and is known to occur at elevations ranging from 100 to 3,510 feet above MSL. Greene's tuctoria is endemic to California; the current range of this species includes Butte, Fresno, Glenn, Madera, Merced, Modoc, Shasta, San Joaquin, Stanislaus, Tehama, and Tulare counties. It is considered extirpated from Fresno, Madera, San Joaquin, Stanislaus, and Tulare counties (CNPS 2023).

There are no CNDDB occurrences of Greene's tuctoria within 5 miles of the AOI (CDFW 2023). The seasonal wetlands and vernal pool occurring onsite are marginally suitable habitat for the species. Greene's tuctoria has a low potential to occur within the AOI.

3.4.2 Amphibians

One species of amphibian was identified by the client as a Target Species to review the potential to occur within the AOI (Table 2). This is discussed below.

3.4.2.1 Western Spadefoot (toad)

Western spadefoot (*Spea hammondii*) is not listed pursuant to either the California or federal ESAs. Western spadefoot is considered a California Species of Special Concern (SSC). Suitable habitat for western spadefoot includes friable soils in which to burrow in upland habitats and breeding ponds. Breeding sites include temporary rain pools, such as vernal pools and seasonal wetlands, or pools within portions of intermittent drainages (Jennings and Hayes 1994). Spadefoots spend most of their adult life within underground burrows or other suitable refugia, such as rodent burrows. In California,

western spadefoot toads are known to occur from the Redding area, Shasta County southward to northwestern Baja California, at elevations below 4,475 ft (Jennings and Hayes 1994).

There are two CNDDB occurrences of western spadefoot (occurrences 67 and 1406) within 5 miles of the AOI (CDFW 2023). Aquatic features occurring onsite represent potential breeding and aestivation habitat. Western spadefoot has potential to occur within the AOI.

During the March 8, 2023 western spadefoot surveys Mr. Machek detected male western spadefoot calls in the large seasonal wetland pool approximately 400 feet south of the AOI (Figure 2). No western spadefoot calls or individual detections were observed within the AOI.

3.4.3 Birds

Four species of birds were identified by the client as Target Species to review the potential to occur within the AOI (Table 2). However, upon further analysis and after the site visit, three species were determined to be absent from the AOI due to the lack of suitable habitat. No further discussion of these species is provided in this analysis. A brief description of the remaining one species that has the potential to occur within the AOI is presented below.

3.4.3.1 Burrowing Owl

The burrowing owl (*Athene cunicularia*) is not listed pursuant to either the California or federal ESAs; however, it is designated as a Bird of Conservation Concern by the USFWS and a California Species of Special Concern by the CDFW. Burrowing owls inhabit dry open rolling hills, grasslands, desert floors, and open bare ground with gullies and arroyos. They can also inhabit developed areas such as golf courses, cemeteries, roadsides within cities, airports, vacant lots in residential areas, school campuses, and fairgrounds (Poulin et al. 2020). This species typically uses burrows created by fossorial mammals, most notably the California ground squirrel but may also use man-made structures such as concrete culverts or pipes; concrete, asphalt, or wood debris piles; or openings beneath concrete or asphalt pavement (California Department of Fish and Game [CDFG] 2012). The breeding season typically occurs between February 1 and August 31, peaking from April 15 to July 15 (CDFG 2012).

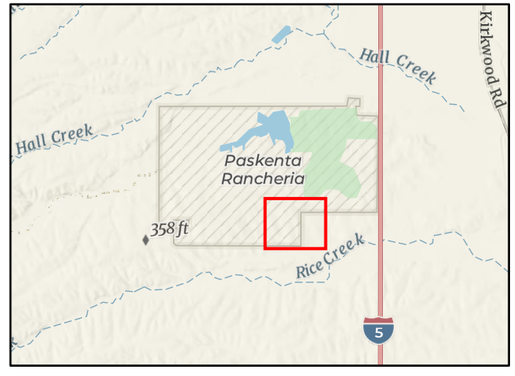
There are two documented CNDDB occurrences of burrowing owl (occurrences 187 and 190) located within 5 miles of the AOI (CDFW 2023). Small mammal burrows were observed in the AOI, and the upland portions of the annual grassland habitat represent suitable burrowing habitat for this species. Burrowing owl has potential to occur within the AOI.

During the March 8, 2023 burrowing owl transect survey, no burrowing owls were observed and no signs of use at potential burrows was observed. One unoccupied potential burrow was observed within the southwest portion of the AOI (Figure 2); however, the burrow was inundated with water at the time of the survey. The unoccupied burrow is considered a potential burrow due to its large size and the potential that it was used in the past and could potentially be used in the future by a burrowing owl.

Map Contents

- Study Area - 26.78 ac.
- Burrowing Owl
- Western Spadefoot

Sources: Maxar (5/27/2021), ESRI



Location: N:\2023\2023-033 Tepa Nomlaki Solar Paskenta Tribe Microgrid Energy Project\MAPS\Biological_Resources\Tepa Microgrid Biological Resources.aprx - Tepa Microgrid Wildlife Survey 20230310 (jwelsh - 3/10/2023)

Map Date: 3/10/2023

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Scale in Feet
0 150 300

Figure 2. Wildlife Survey Results

2023-033 Tepa Microgrid Energy Project

4.0 RECOMMENDATIONS

4.1 Aquatic Features

Based on the observations of potentially USACE jurisdictional aquatic features during the site reconnaissance visit, ECORP recommends the following measures to avoid impacts to potentially jurisdiction aquatic resources:

WET-1: If the Project would impact aquatic features, we recommend that an aquatic resource delineation (ARD) be conducted consistent with USACE minimum standards for acceptance of Aquatic Delineation Reports (USACE 2016a). Completion of the ARD Report will serve to inform potential Clean Water Act permitting responsibilities with the USACE and Environmental Protection Agency (EPA).

WET-2: If the Project will avoid impacts to aquatic features, we recommend that aquatic feature buffer fencing or other visual markers be installed to avoid impacts to the aquatic features (including impacts to water quality and quantity). With this avoidance approach, permitting actions with the USACE will not be required.

4.2 Rare Plants

The plant species with the potential to occur within the AOI are hydrophytes. We recommend that the following avoidance and minimization measures be implemented to avoid impacts to special-status plant species.

BIO-1: If the Project would avoid buffered aquatic features within the AOI, then the Project would avoid impacts to these plant species. We recommend installing and maintaining temporary high visibility fencing around the buffered aquatic feature in the AOI during periods of active construction.

BIO-2: If the Project would impact any area within the buffered aquatic features within the AOI, we recommend that CNPS protocol-level rare plant surveys be conducted during the species' appropriate blooming period prior to Project initiation. If any special-status plant species are detected, we recommend avoiding detected rare plants with the following measures:

1) Install temporary high visibility fencing around the special-status plant species observed under the supervision of a qualified biologist and avoid impacts to these environmentally sensitive, no-disturbance areas; or,

2) If impacts to special-status plant species cannot be avoided, a qualified biologist will collect the viable reproductive portions of the plant and transplant the species according to established protocols Depending on the listing status of the rare plant, this effort may be coordinated with the United States Fish and Wildlife Service during the ESA consultation process with the USACE during Clean Water Act Section 404 permitting.

4.3 Wildlife

4.3.1 Western Spadefoot

Given the potential for western spadefoot to occur within the AOI and the audio detections of males calling 400 feet south of the southern AOI boundary, we recommend implementation of **WET-2.** If impacts to buffered aquatic features cannot be avoided, we recommend implementation of the following measures:

BIO-3: A qualified biologist shall conduct up to two preconstruction daytime and nighttime surveys for all life stages of western spadefoot if feasible to be conducted when surface water is ponded in aquatic features between October through May (when suitable environmental conditions are met) prior to Project initiation. Surveys will be conducted during or following rain events and in non-freezing temperatures. Daytime surveys of aquatic features will be conducted with the aid of binoculars and polarized sunglasses for all life stages of western spadefoot as well as adjacent upland habitat for burrowing adults and juveniles. Nighttime audio detection and eye-shine surveys will be conducted with the aid of binoculars and flashlight for calling males in and near aquatic features.

A preconstruction survey report shall be prepared and submitted to the Project Managers that includes the methods, results, and recommendations based on the survey. If the preconstruction survey(s) are conducted according to the above methods and no detections of western spadefoot occur within the AOI, then the Project will install appropriate wildlife exclusion fencing (such as silt fencing) along the southern project limits and no further measures need to be taken. If the preconstruction survey(s) are conducted according to the above methods and there are detections of western spadefoot within the AOI, then the qualified biologist will relocate the individuals to suitable breeding habitat (aquatic features that pond water for 30+ days) outside of the AOI and the following measures (BIO-4 through BIO-7) will be implemented.

BIO-4: No Project activities shall occur from 30 minutes before local sunset time to 30 minutes after local sunrise time, and 48 hours after a significant rain event with a National Weather Service forecast of greater than or equal to ½-inch of rainfall within a 24-hour period.

BIO-5: No equipment or vehicle refueling, maintenance, or staging shall occur within 100 feet of an aquatic feature that represents western spadefoot breeding habitat, as determined by a qualified biologist. The Project will coordinate the location of the equipment and vehicle staging area with the qualified biologist.

BIO-6: Any silt fencing installed around aquatic features that represent western spadefoot breeding habitat shall not be completely enclosed so as to not entrap individuals within the area. The openings of the silt fencing will generally be oriented away from Project activities and towards the closest Project boundary as to direct individuals out of the Project limits. Wildlife exclusion fencing installed around aquatic features with positive detections of

western spadefoot will be installed 40 meters from the extent of the aquatic feature. Project personnel will allow any encountered individuals to leave the site on their own volition or will be relocated by a qualified biologist to suitable breeding habitat.

BIO-7: Any erosion or sediment control devices (such as straw wattles or erosion blankets) implemented within 500 feet of aquatic features that represent western spadefoot breeding habitat shall not contain materials that could cause entanglement of western spadefoot such as monofilament or any other non-biodegradable material.

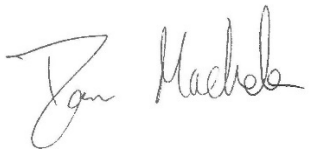
4.3.2 Burrowing Owl

Given the potential for burrowing owl to occur within the AOI, ECORP recommends the following avoidance and minimization measure to avoid impacts to burrowing owl:

BIO-8: Burrowing owl surveys will be conducted prior to Project ground disturbing activities according to the 2012 California Department of Fish and Game *Staff Report on Burrowing Owl Mitigation* (CDFW 2012). The last survey should occur within 14 days prior to initiation of construction activities. A preconstruction survey report will be prepared and submitted to the Project Managers including methods, results, and recommendations for avoidance and minimization measures based on the 2012 *Staff Report on Burrowing Owl Mitigation* if burrowing owls are observed.

ECORP is prepared to discuss any needs based on the client's potential Project alternatives. Please contact ECORP Project Manager Jeff Tupen with any comments or questions at (916) 782-9100, or via email at jtupen@ecorpconsulting.com.

Sincerely,



Dan Machek
Staff Biologist
ECORP Consulting, Inc.

Appendices:

Appendix A – Photo Point Map

Appendix B – Representative AOI Photographs

5.0 REFERENCES

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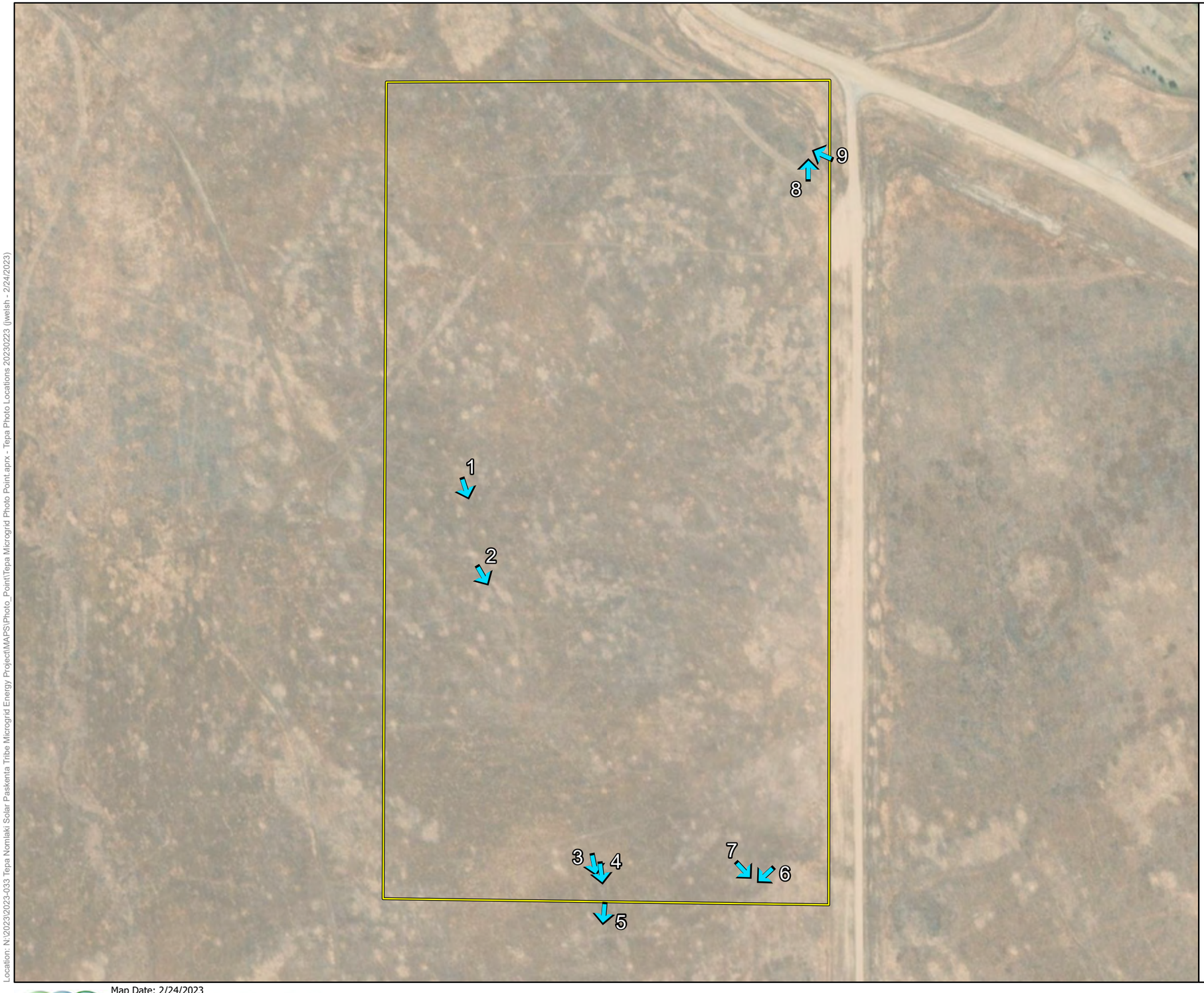
2525 Warren Drive ● Rocklin, CA 95677 ● Tel: (916) 782-9100 ● Fax: (916) 782-9134 ● www.ecorpconsulting.com

APPENDIX A

Photo Point Map

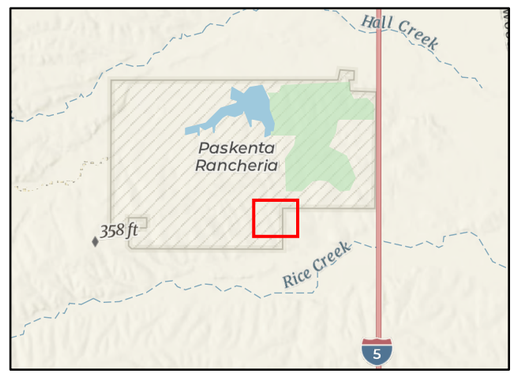
2525 Warren Drive ● Rocklin, CA 95677 ● Tel: (916) 782-9100 ● Fax: (916) 782-9134 ● www.ecorpconsulting.com



Map Contents

- Study Area - 26.80 ac.
- Photo Location and Direction

Sources: Maxar (5/27/2021), ESRI



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Map Date: 2/24/2023

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 180

Appendix A. Photograph Locations

2023-033 Tepa Nomlaki Solar Paskenta Tribe
Microgrid Energy Project

APPENDIX B

Representative AOI Photos

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Photo 1. Seasonal Wetland Swale

Photo 2. Seasonal Wetland Swale

Photo 3. Seasonal Wetlands

Photo 4. Seasonal Wetlands

Photo 5. Seasonal Wetlands and swales

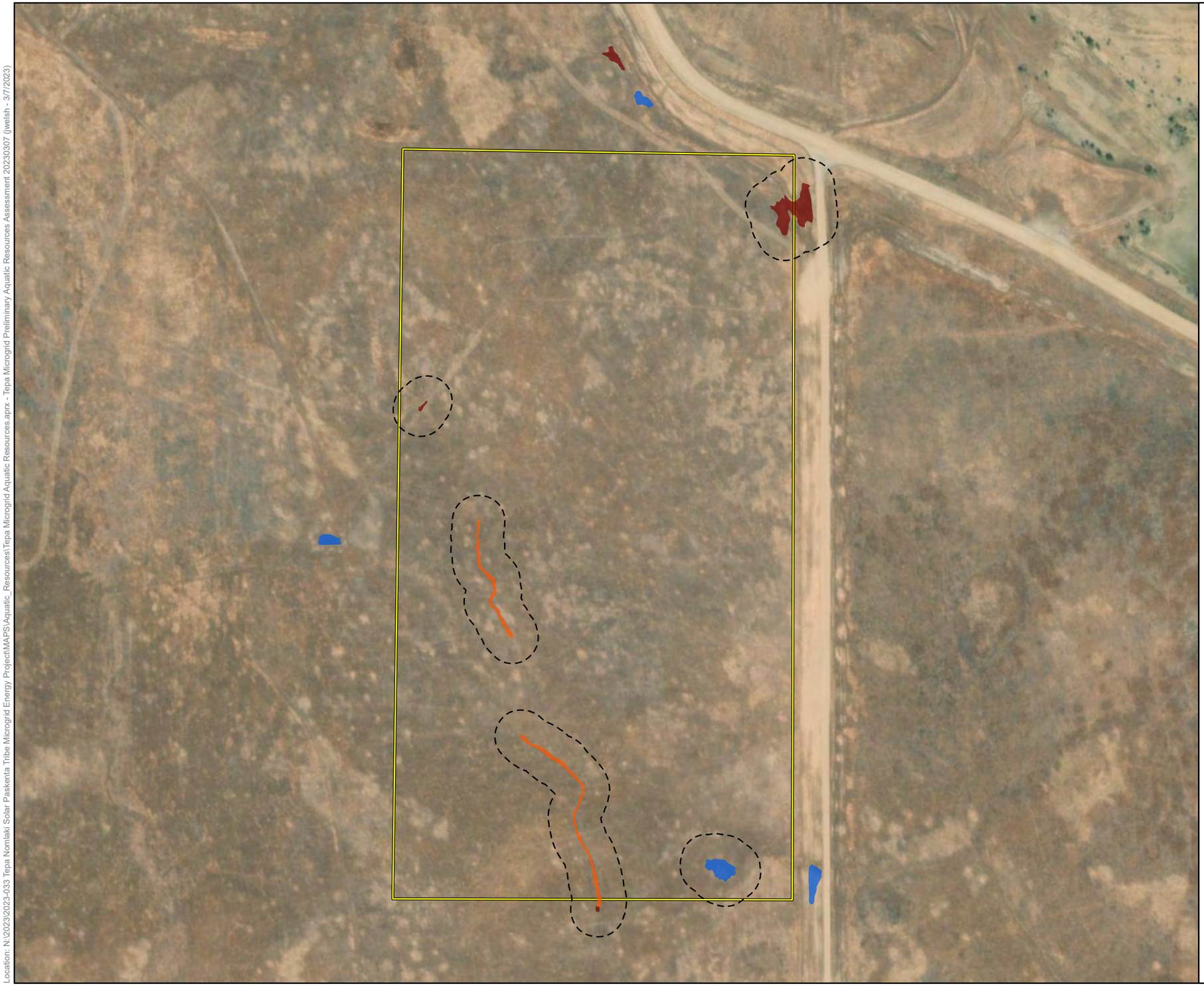
Photo 6. Vernal pool

Photo 7. Small mammal burrows observed onsite are habitat for western spadefoot and burrowing owl.

Photo 8. Seasonal Wetland

Photo 9. Seasonal Wetland

Exhibit 2



Map Contents

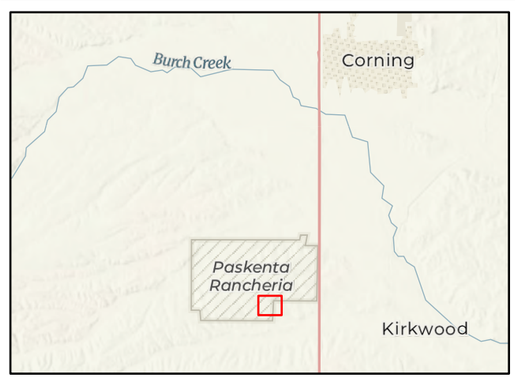
- Study Area - 26.78 ac.
- Buffer - 50 ft

Aquatic Resource Type

- Seasonal Wetland
- Seasonal Wetland Swale
- Vernal Pool

Photo Source: Maxar (5/27/2021)
Boundary Source: The Tepa Companies
Delineator(s): Dan Machek
Coordinate System: NAD 1983 StatePlane California I FIPS 0401 Feet

The information depicted on this graphic represents a preliminary wetland assessment. The assessment was not conducted in accordance with the Corps of Engineers Wetland Delineation Manual and Sacramento District Minimum Standards. The project boundaries, wetland boundaries, and acreage values are approximate.
The acreage value for each feature has been rounded to the nearest 1/1000 decimal. Summation of these values may not equal the total potential Waters of the U.S. acreage reported.



Location: N:\2023\2023-033 Tepa Nomlaki Solar Paskenta Tribe Microgrid Energy Project\MAPS\Aquatic_Resources\Tepa Microgrid Aquatic Resources.aprx - Tepa Microgrid Preliminary Aquatic Resources Assessment 20230307 (jwelsh - 3/7/2023)

Map Date: 3/7/2023

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Scale in Feet
0 100 200

Preliminary

Figure 1. Preliminary Aquatic Resources Assessment

2023-033 Tepa Microgrid Energy Project

Exhibit 3

ENVIRONMENTAL POLICY ORDINANCE

OF THE

PASKENTA BAND

OF

NOMLAKI INDIANS

TABLE OF CONTENTS

ARTICLE I. PURPOSE

The purpose of this Ordinance is to satisfy the Band's obligations under ARTICLE 10.8.1 of the Tribal-State Gaming Compact between the Band and the State of California. By enacting and complying with this Ordinance, the Band establishes a uniform policy for the preparation, circulation, and consideration by the Tribal Council of a document which evaluates potential off-Reservation environmental effects of any and all Projects to be commenced or continued on or after the effective date of the Compact. The goal of the environmental review process established herein is to ensure that, when the Tribal Council makes a final decision as to whether, and under what conditions, to proceed with an on-Reservation Project, it is fully informed regarding the potential off-Reservation environmental effects of that Project in making that decision and in evaluating alternatives, as well as the costs and benefits of the Project and its alternatives.

ARTICLE II. STATEMENT OF ENVIRONMENTAL POLICY

The Tribal Council finds, determines, and declares that:

1. It is the policy of the Band to protect the natural environment, including the land, air, water, minerals, and all living things on the reservation and to take into account in the tribal decision-making process the potential off-Reservation effect of on-Reservation Projects undertaken by the Band.

2. While it is also an important policy of the Band to promote the economic development of the Reservation for the benefit of both the Band and its members, the Tribal Council recognizes that development activities on the Reservation may have a direct impact on the health, welfare, and safety of the Band and its members, including environmental and cultural resources on the reservation, as well as, to a lesser extent, off the reservation.

ARTICLE III. AUTHORITY

The Ordinance is enacted under the inherent sovereign authority of the Paskenta Band of Nomlaki Indians and pursuant to authority previously granted to the Tribal Council by the General Council to take all steps necessary to comply with the requirements of the Compact and to maintain tribal government gaming as a source of income and other benefits for the Band and its members.

ARTICLE IV. DEFINITIONS

For the purpose of this Ordinance, the following words or phrases shall have the following definitions:

1. *Band*: The Paskenta Band of Nomlaki Indians, acting through its duly constituted Tribal Council.

2. *Compact*: The Tribal-State Compact between the Band and the State of California executed by the Band September 10, 1999, and approved by the Department of Interior on May 5, 2000 and any amendments thereto for the conduct of class III gaming by the Band.

3. *Environmental Evaluation*: An informational document which (a) identifies all potential, significant off-Reservation environmental impacts of a proposed Project, (b) discusses the nature and seriousness of each such impact, (c) considers alternative means of mitigating each such impact, and (d) to the extent feasible, discusses the views and comments of interested parties and governmental agencies on such impacts and their mitigation.

4. *Environmental Impact Reports*: Any environmental assessment, environmental impact report, or environmental impact statement; as the case may be.

5. *Gaming Facility*: Any building in which class III gaming activities or gaming operations occur, or in which the business records, receipts, or other funds of the gaming operation are maintained (but excluding off-site facilities primarily dedicated to storage of those records, and financial institutions,) and all rooms, buildings, and areas, including parking lots and walkways, a principal purpose of which is to serve the activities of the gaming operation.

6. *Ordinance*: This Tribal Environmental Policy Ordinance.

7. *Project*: Any expansion or any significant renovation or modification of an existing Gaming Facility, or any significant excavation, construction, or development associated with the Band's Gaming Facility or proposed Gaming Facility.

8. *Record of Decision*: The record of the Tribal Council's decision with respect to a proposed Project after review and consideration of an Environmental Evaluation and related information.

9. *Reservation*: All land within the exterior boundaries of the Paskenta Reservation and all additions thereto, under the governmental jurisdiction of the Band.

10. *Tribal Council*: The Paskenta Band of Nomlaki Indians Council created pursuant to the Band's Constitution.

ARTICLE V. ENVIRONMENTAL REVIEW PROCESS

1. Lead Agency. The Band shall be the lead agency for the purposes of preparing the environmental evaluations and consultation, and making determinations regarding the

environmental impacts of proposed tribal Projects, issuing findings of no significant impacts, certifying environmental evaluations, and selecting alternatives and mitigation measures deemed most effective to implement the policies set forth in this Ordinance, all in the manner set forth below.

2. *Determinations of Off-Reservation Environmental Impact of Projects:* The procedure for tribal review of the potential off-reservation environmental impacts of Projects will be as follows, in the following order to the extent feasible:

a. Preparation of Draft Environmental Evaluation. For every proposed Project, a draft Environmental Evaluation shall be performed and prepared either by the Band itself, using its own staff and resources, or by an outside consultant engaged under contract with the Band. The policies and purposes of the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) consistent with the Band's governmental interests shall be the basis for this evaluation.

b. Notice of Project and of Preparation of Draft Environmental Evaluation. Before or at the time of distribution of copies of the draft Environmental Evaluation, the Band or the engaged consultant will cause to be published in at least one local newspaper of general circulation in the vicinity of the Reservation a notice, describing the nature of the Project and the times and places where copies of the draft Environmental Evaluation will be available for public inspection. Each such notice will also invite both interested parties and governmental agencies to submit comments on the draft Environmental Evaluation to a designated tribal official or consultant during a period specified in the notice. Known interested parties and governmental agencies may also receive this notice by mail.

c. Consultation with Interested Parties and Agencies. Before finalizing the Environmental Evaluation, Tribal staff or the consultant shall consult with and solicit comments from any federal, state, or local governmental agency, which has jurisdiction by law or special expertise with respect to any potentially involved environmental impact. At a minimum, the Band or consultant must submit copies of all environmental impact reports concerning the proposed project to the State Clearinghouse in the Office of Planning and Research and the Tehama County Board of Supervisors. Additionally, Tribal staff or the consultant will make such copies available for public inspection at the Band's Tribal Office on the Reservation and also at such other locations as may befit the nature of the Project. The Band will consult with the Tehama County Board of Supervisors to discuss off-Reservation environmental impacts identified in the draft Environmental Evaluation or any preliminary draft thereof.

d Conclusion of Consultation. At or after the conclusion of consultation, if the Tribal Council is satisfied that all relevant information is before it in the

forms of the draft Environmental Evaluation and the previously received written comments, the Tribal Council may act on the proposed project as described below in ARTICLE F.2.e. However, in its discretion, if the Tribal Council believes that further studies, information or hearings are desirable, it may direct the preparation of such additional studies, information or hearings.

e. Actions which the Tribal Council may take on Draft Environmental Evaluation. When the Tribal Council is satisfied that it is fully informed as to all relevant items from the draft Environmental Evaluation, or the written comments received on that draft Environmental Evaluation, the Tribal Council may conduct its own analysis of all relevant facts so as to balance the costs and benefits of the Project in one of the following ways:

1. Issue a finding of no significant impact and proceed with the Project;

2. Direct either Tribal staff or the engaged consultant to consolidate all comments and views of both affected governmental agencies and the public on the draft Environmental Evaluation, with appropriate responses to all new information and submit the consolidated final Environmental Evaluation to the Tribal Council after which the Tribal Council will perform the analysis and balancing described in this ARTICLE and take one of the actions described herein;

3. Accept the draft Environmental Evaluation as the final Environmental Evaluation and proceed with the Project but subject to a good-faith effort to implement whatever conditions or further mitigation measures that the Tribal Business Council may deem desirable.

4. Accept the draft Environmental Evaluation but not proceed with the Project.

5. Reject the draft Environmental Evaluation and not proceed with the Project;

h. Form of Tribal Council Action on Draft Environmental Evaluation. Whichever of the above five actions the Tribal Council may take will be in the form of a written resolution which together with all supporting documentation and information, shall constitute the Band's Record of Decision for the Project in question. There will be no appeal from such action by the Tribal Council whose action is final for the Band. To the extent that such actions are feasible and consistent with the Band's governmental interests, the Band will require good-faith effort to implement all mitigation measures recommended in the Environmental Evaluation in any action to proceed with a Project and deemed desirable by the Tribal Council. Any such resolution by which the Tribal

Council proceeds with a Project will include findings that a good-faith effort shall be made to cause the stated mitigated measures to be implemented, even if some of those mitigation measures are within the responsibility and jurisdiction of another agency.

ARTICLE VI. CONTINUING OBLIGATION DURING CONDUCT OF THE PROJECT

During the conduct of the Project, the Band shall:

1) keep the Tehama County Board of Supervisors and potentially affected members of the public apprised of the Project's progress; and

2) make good-faith efforts to mitigate any and all significant adverse off-Reservation environmental impacts deemed appropriate by the Tribal Council.

ARTICLE VII. AMENDMENTS

This Ordinance may be cancelled, suspended, amended, or modified at any time, by the Tribal Council in its sole discretion.

CERTIFICATION

THE PASKENTA BAND OF NOMLAKI INDIANS TRIBAL COUNCIL CERTIFIES THAT THESE RESOLUTIONS WERE ADOPTED ON May 2, 2019 BY A VOTE OF 5 FOR, 0 AGAINST AND 0 ABSTAINING, AND THAT SAID RESOLUTION HAS NOT BEEN RESCINDED OR AMENDED IN ANY WAY SINCE ITS ADOPTION.

ANDREW ALEJANDRE, TRIBAL CHAIRPERSON — May 2, 2019 DATE

LATISHA MILLER, VICE CHAIR — May 2, 2019 DATE

AMBROSIA RICO, TREASURER — May 2, 2019 DATE

LUIS DELARA, SECRETARY — May 2, 2019 DATE

NATASHA MAGANA, COUNCIL MEMBER-AT-LARGE — May 2, 2019 DATE

Exhibit A
Scope of Work

I. TASK ACRONYM/TERM LISTS

A. Task List

Task #	CPR[1]	Task Name
1		General Project Tasks
2		Develop Site and Microgrid Design Integrating LDES Technologies
3	X	Procure Equipment and Materials for LDES System
4		Integrate Control Architecture, Install, Pre-Energize and Test Technologies
5	X	Test and Commission Project Systems
6		Operate LDES as Part of A Microgrid To Support Site During Outage Events; Reduce Peak Demand
7	X	Measurement and Verification
8		Evaluation of Project Benefits
9		Technology/Knowledge Transfer Activities

B. Acronym/Term List

Acronym/Term	Meaning
AHJ	Authority Having Jurisdiction
CAM	Commission Agreement Manager
CAO	Commission Agreement Officer
CEC	California Energy Commission
Commissioning	Full charge and discharge at 6MW for 10hrs for the combined LDES technologies during PSPS, other outage events, or for load reduction at times of peak demand
CPR	Critical Project Review
Grid	Bulk energy system
IIS	Internet Information Services
LDES	Long Duration Energy Storage
MW	Megawatt
MWh	Megawatt-hour
Mechanical completion of LDES systems	Point at which (a) structural installation of the applicable project system(s) has occurred and (b) the project(s) is mechanically, electrically, and functionally complete to the extent necessary to be ready for initial commissioning, adjustment, and testing
MS	Microsoft
PSPS	Public Safety Power Shut Off
SQL	Structured Query Language
Tribe	Paskenta Band of Nomlaki Indians
TAC	Technical Advisory Committee

[1] Please see subtask 1.3 in Part III of the Scope of Work (General Project Tasks) for a description of Critical Project Review (CPR) Meetings.

Exhibit A
Scope of Work

II. PURPOSE OF AGREEMENT, PROBLEM/SOLUTION STATEMENT, AND GOALS AND OBJECTIVES

A. Purpose of Agreement

The purpose of this Agreement is to fund deployment of 5 Megawatt (MW)/20 Megawatt-hour (MWh) of non-lithium-ion Long Duration Energy Storage (LDES) system. The LDES system will be operated as part of a microgrid that includes 5 MW of solar photovoltaic and serves the Paskenta Band of Nomlaki Indians (Tribe). The project will demonstrate the microgrid's ability to power critical Tribal operations during outage events, such as Public Safety Power Shut Off (PSPS) events, and peak grid demand.

B. Problem/ Solution Statement

Problem

For multiple reasons, the utility bulk energy system (Grid) faces increasing costs and risks of instability. LDES has the potential to significantly lower energy and power costs, unburden strained utility and ISO systems, mitigate risks of system brown and blackouts, and provide resiliency to communities, particularly at grid-edge, but has yet to be demonstrated at scale. Underserved communities have not yet had the opportunity to take advantage of these opportunities and are particularly vulnerable to Grid outages and rising costs of electricity.

Solution

The project will deploy a 20MWh flow battery coupled with a co-located 5MW solar array to support all or nearly all Tribal energy needs. In particular, the system will be "islandable," or able to operate in parallel to the utility, during prolonged outages. While the expectation of the current design is that the system will be able to support Tribal energy needs for twenty hours, longer durations may be possible. During summer months, when PSPS, excess grid demand, or other factors may lead to outages, the solar array is expected to have its greatest productivity. In this setting, it may be possible for the system to sustain Tribal operations indefinitely.

Given adequate power reserves, the system may also be able to participate in ancillary services such as Automated Demand Response.

C. Goals and Objectives of the Agreement

Agreement Goals

The goals of this Agreement are to:

- Deploy a 20-hour, non-lithium-ion LDES technology in a Tribal Community.
- Demonstrate how LDES as part of a microgrid can provide reliability and resilience benefits through islanding, net load reduction, and time-shifting of solar.
- Demonstrate Tribal economic and social benefits resulting from decreased energy costs, increased reliability and resiliency, and expansion of Tribal workforce skills.
- Determine the long-term performance of flow-type battery systems.
- Achieve LDES system readiness by December 2023 and full microgrid operation by

early 2024.

Long-Duration Energy Storage for Tribal and Underserved Communities:

To date, there have been insufficient number and capacity of behind-the-meter long-duration energy storage deployments, particularly in communities of need. These communities of need are often at greater risk of adverse environmental impacts of conventional energy systems, Grid outages, and intentional shutoffs. This demonstration project will illustrate the capability to support all or nearly all Tribal power needs for upwards of twenty (20) hours continuously during Grid outages, using only renewable energy resources. Several additional notable achievements are expected. First, this project will demonstrate the feasibility of State, Tribal, Federal, and commercial collaboration for project execution. Using resources from all of these sources will demonstrate emerging financial models to deploy LDES in Tribal Communities. Second, the project will demonstrate the ability to time-shift clean energy production to both significantly reduce Tribal energy cost, as well as convert Tribal electricity consumption to nearly 100% renewables. By combining a large energy storage system with a sizable solar array, the project will mitigate the issues attendant to solar only including intermittent output, power quality variation, and unpredictable production. The project will also become a resource to, rather than a draw upon increasingly precious grid resources. Third, the LDES system will demonstrate opportunities to participate in ancillary services markets and realize emerging revenues for project partners. Finally, as a long-term project studying the performance of non-lithium-ion batteries, the project will provide invaluable data about real-world system outputs, maintenance and operation needs, unanticipated expenses or savings, and overall performance within a fully integrated microgrid. This data will be indispensable to demonstrate a replicable, cost-effective, safe, and durable method to support rapid penetration of renewables in California and beyond, as well as increased reliability, resiliency, and overall Grid safety.

Agreement Objectives

The objectives of this Agreement are to:

- Demonstrate significant increased opportunities for the penetration of renewables in California using LDES.
- Improve grid-edge power reliability and resiliency.
- Create a replicable model for LDES deployment in Tribal communities.

III. TASK 1 GENERAL PROJECT TASKS

PRODUCTS

Subtask 1.1 Products

The goal of this subtask is to establish the requirements for submitting project products (e.g., reports, summaries, plans, and presentation materials). Unless otherwise specified by the Commission Agreement Manager (CAM), the Recipient must deliver products as required below by the dates listed in the **Project Schedule (Part V).** All products submitted which will be viewed by the public, must comply with the accessibility requirements of Section 508 of the federal Rehabilitation Act of 1973, as amended (29 U.S.C. Sec. 794d), and regulations implementing that act as set forth in Part 1194 of Title 36 of the Federal Code of Regulations**.** All technical tasks should include product(s). Products that require a draft version are indicated by marking **"(draft and final)"** after the product name in the "Products" section of the task/subtask.

Exhibit A
Scope of Work

If "(draft and final)" does not appear after the product name, only a final version of the product is required. With respect to due dates within this Scope of Work, **"days"** means working days.

The Recipient shall:

For products that require a draft version, including the Final Report Outline and Final Report

- Submit all draft products to the CAM for review and comment in accordance with the Project Schedule (Part V). The CAM will provide written comments to the Recipient on the draft product within 15 days of receipt, unless otherwise specified in the task/subtask for which the product is required.
- Consider incorporating all CAM comments into the final product. If the Recipient disagrees with any comment, provide a written response explaining why the comment was not incorporated into the final product.
- Submit the revised product and responses to comments within 10 days of notice by the CAM, unless the CAM specifies a longer time period, or approves a request for additional time.

For products that require a final version only

- Submit the product to the CAM for acceptance. The CAM may request minor revisions or explanations prior to acceptance.

For all products

- Submit all data and documents required as products in accordance with the following:

Instructions for Submitting Electronic Files and Developing Software:

- **Electronic File Format**
  - Submit all data and documents required as products under this Agreement in an electronic file format that is fully editable and compatible with the California Energy Commission's (CEC) software and Microsoft (MS)-operating computing platforms, or with any other format approved by the CAM. Deliver an electronic copy of the full text of any Agreement data and documents in a format specified by the CAM, such as memory stick.

  The following describes the accepted formats for electronic data and documents provided to the CEC as products under this Agreement, and establishes the software versions that will be required to review and approve all software products:
  - Data sets will be in MS Access or MS Excel file format (version 2007 or later), or any other format approved by the CAM.
  - Text documents will be in MS Word file format, version 2007 or later.
  - Project management documents will be in MS Project file format, version 2007 or later.

- **Software Application Development**
  Use the following standard Application Architecture components in compatible versions for any software application development required by this Agreement (e.g., databases, models, modeling tools), unless the CAM approves other software applications such as open-source programs:
  - MS ASP.NET framework (version 3.5 and up). Recommend 4.0.
  - MS Internet Information Services (IIS), (version 6 and up)

Recommend 7.5.
- Visual Studio.NET (version 2008 and up). Recommend 2010.
- C# Programming Language with Presentation (UI), Business Object and Data Layers.
- Structured Query Language (SQL).
- MS SQL Server 2008, Stored Procedures. Recommend 2008 R2.
- MS SQL Reporting Services. Recommend 2008 R2.
- XML (external interfaces).

Any exceptions to the Electronic File Format requirements above must be approved in writing by the CAM. Services Branch to determine whether the exceptions are allowable.

MEETINGS

Subtask 1.2 Kick-off Meeting

The goal of this subtask is to establish the lines of communication and procedures for implementing this Agreement.

The Recipient shall:

- Attend a "Kick-off" meeting with the CAM, the Commission Agreement Officer (CAO), and any other CEC staff relevant to the Agreement. The Recipient will bring its Project Manager and any other individuals designated by the CAM to this meeting. The administrative and technical aspects of the Agreement will be discussed at the meeting. Prior to the meeting, the CAM will provide an agenda to all potential meeting participants. The meeting may take place in person or by electronic conferencing (e.g., WebEx), with approval of the CAM.

  The administrative portion of the meeting will include discussion of the following:
  - Terms and conditions of the Agreement;
  - Invoicing and auditing procedures;
  - Administrative products (subtask 1.1);
  - Critical Project Review (CPR) meetings (subtask 1.3);
  - Match fund documentation (subtask 1.7);
  - Permit documentation (subtask 1.8);
  - Subcontracts (subtask 1.9); and
  - Any other relevant topics.

  The technical portion of the meeting will include discussion of the following:
  - The CAM's expectations for accomplishing tasks described in the Scope of Work;
  - An updated Project Schedule;
  - Technical products (subtask 1.1);
  - Progress reports (subtask 1.5);
  - Final Report (subtask 1.6);
  - Technical Advisory Committee (TAC) meetings (subtasks 1.10 and 1.11); and
  - Any other relevant topics.

- Provide *Kick-off Meeting Presentation* to include but not limited to:
  - Project overview (i.e. project description, goals and objectives, technical tasks, expected benefits, etc.)
  - Project schedule that identifies milestones

- List of potential risk factors and hurdles, and mitigation strategy

- Provide an *Updated Project Schedule, Match Funds Status Letter,* and *Permit Status Letter*, as needed to reflect any changes in the documents.

The CAM shall:
- Designate the date and location of the meeting.
- Send the Recipient a *Kick-off Meeting Agenda*.

Recipient Products:
- Kick-off Meeting Presentation
- Updated Project Schedule *(if applicable)*
- Match Funds Status Letter (subtask 1.7) *(if applicable)*
- Permit Status Letter (subtask 1.8) *(if applicable)*

CAM Product:
- Kick-off Meeting Agenda

Subtask 1.3 Critical Project Review (CPR) Meetings
The goal of this subtask is to determine if the project should continue to receive CEC funding, and if so whether any modifications must be made to the tasks, products, schedule, or budget. CPR meetings provide the opportunity for frank discussions between the CEC and the Recipient. As determined by the CAM, discussions may include project status, challenges, successes, advisory group findings and recommendations, final report preparation, and progress on technical transfer and production readiness activities (if applicable). Participants will include the CAM and the Recipient and may include the CAO and any other individuals selected by the CAM to provide support to the CEC.

CPR meetings generally take place at key, predetermined points in the Agreement, as determined by the CAM and as shown in the Task List on page 1 of this Exhibit. However, the CAM may schedule additional CPR meetings as necessary. The budget will be reallocated to cover the additional costs borne by the Recipient, but the overall Agreement amount will not increase. CPR meetings generally take place at the CEC, but they may take place at another location, or may be conducted via electronic conferencing (e.g., WebEx) as determined by the CAM.

The Recipient shall:
- Prepare and submit a *CPR Report* for each CPR meeting that: (1) discusses the progress of the Agreement toward achieving its goals and objectives; and (2) includes recommendations and conclusions regarding continued work on the project.
- Attend the CPR meeting.
- Present the CPR Report and any other required information at each CPR meeting.

The CAM shall:
- Determine the location, date, and time of each CPR meeting with the Recipient's input.
- Send the Recipient a *CPR Agenda* with a list of expected CPR participants in advance of the CPR meeting. If applicable, the agenda will include a discussion of match funding and permits.

- Conduct and make a record of each CPR meeting. Provide the Recipient with a schedule for providing a Progress Determination on continuation of the project.
- Determine whether to continue the project, and if so whether modifications are needed to the tasks, schedule, products, or budget for the remainder of the Agreement. If the CAM concludes that satisfactory progress is not being made, this conclusion will be referred to the Deputy Director of the Energy Research and Development Division.
- Provide the Recipient with a *Progress Determination* on continuation of the project, in accordance with the schedule. The Progress Determination may include a requirement that the Recipient revise one or more products.

Recipient Products:

- CPR Report(s)

CAM Products:

- CPR Agenda(s)
- Progress Determination

Subtask 1.4 Final Meeting

The goal of this subtask is to complete the closeout of this Agreement.

The Recipient shall:

- Meet with CEC staff to present project findings, conclusions, and recommendations. The final meeting must be completed during the closeout of this Agreement. This meeting will be attended by the Recipient and CAM, at a minimum. The meeting may occur in person or by electronic conferencing (e.g., WebEx), with approval of the CAM.

  The technical and administrative aspects of Agreement closeout will be discussed at the meeting, which may be divided into two separate meetings at the CAM's discretion.
  - The technical portion of the meeting will involve the presentation of findings, conclusions, and recommended next steps (if any) for the Agreement. The CAM will determine the appropriate meeting participants.
  - The administrative portion of the meeting will involve a discussion with the CAM and the CAO of the following Agreement closeout items:
    - Disposition of any procured equipment.
    - The CEC's request for specific "generated" data (not already provided in Agreement products).
    - Need to document the Recipient's disclosure of "subject inventions" developed under the Agreement.
    - "Surviving" Agreement provisions such as repayment provisions and confidential products.
    - Final invoicing and release of retention.
- Prepare a *Final Meeting Agreement Summary* that documents any agreement made between the Recipient and Commission staff during the meeting.
- Prepare a *Schedule for Completing Agreement Closeout Activities*.
- Provide copies of *All Final Products* on a USB memory stick, organized by the tasks in the Agreement.

Products:

- Final Meeting Agreement Summary *(if applicable)*

- Schedule for Completing Agreement Closeout Activities
- All Final Products

REPORTS AND INVOICES

Subtask 1.5 Progress Reports and Invoices

The goals of this subtask are to: (1) periodically verify that satisfactory and continued progress is made towards achieving the project objectives of this Agreement; and (2) ensure that invoices contain all required information and are submitted in the appropriate format.

The Recipient shall:

- Submit a monthly *Progress Report* to the CAM. Each progress report must:
  - Summarize progress made on all Agreement activities as specified in the scope of work for the preceding month, including accomplishments, problems, milestones, products, schedule, fiscal status, and an assessment of the ability to complete the Agreement within the current budget and any anticipated cost overruns. See the Progress Report Format Attachment for the recommended specifications.
- Submit a monthly or quarterly *Invoice* that follows the instructions in the "Payment of Funds" section of the terms and conditions, including a financial report on Match Funds and in-state expenditures.
-

Products:

- Progress Reports
- Invoices

Subtask 1.6 Final Report

The goal of this subtask is to prepare a comprehensive Final Report that describes the original purpose, approach, results, and conclusions of the work performed under this Agreement. When creating the Final Report Outline and the Final Report, the Recipient must use the CEC Style Manual provided by the CAM.

Subtask 1.6.1 Final Report Outline

The Recipient shall:

- Prepare a *Final Report Outline* in accordance with the *Energy Commission Style Manual* provided by the CAM.

Recipient Products:

- Final Report Outline (draft and final)

CAM Product:

- Energy Commission Style Manual
- Comments on Draft Final Report Outline
- Acceptance of Final Report Outline

Subtask 1.6.2 Final Report

The Recipient shall:

- Prepare a *Final Report* for this Agreement in accordance with the approved Final Report

Outline, Energy Commission Style Manual, and Final Report Template provided by the CAM with the following considerations:

- Ensure that the report includes the following items, in the following order:
  - Cover page (**required**)
  - Credits page on the reverse side of cover with legal disclaimer (**required**)
  - Acknowledgements page (optional)
  - Preface (**required**)
  - Abstract, keywords, and citation page (**required**)
  - Table of Contents (**required**, followed by List of Figures and List of Tables, if needed)
  - Executive summary (**required**)
  - Body of the report (**required**)
  - References (if applicable)
  - Glossary/Acronyms (If more than 10 acronyms or abbreviations are used, it is required.)
  - Bibliography (if applicable)
  - Appendices (if applicable) (Create a separate volume if very large.)
  - Attachments (if applicable)
- Submit a draft of the Executive Summary to the TAC for review and comment.
- Develop and submit a *Summary of TAC Comments on Draft Final Report* received on the Executive Summary. For each comment received, the recipient will identify in the summary the following:
  - Comments the recipient proposes to incorporate.
  - Comments the recipient does not propose to incorporate and an explanation for why.
- Submit a draft of the report to the CAM for review and comment. The CAM will provide written comments to the Recipient on the draft product within 15 days of receipt.
- Incorporate all CAM comments into the *Final Report*. If the Recipient disagrees with any comment, provide a *Written Responses to Comments* explaining why the comments were not incorporated into the final product.

- Submit the revised *Final Report* electronically with any Written Responses to Comments within 10 days of receipt of CAM's Written Comments on the Draft Final Report, unless the CAM specifies a longer time period or approves a request for additional time.

Products:

- Summary of TAC Comments on Draft Final Report
- Draft Final Report
- Written Responses to Comments *(if applicable)*
- Final Report

CAM Product:

- Written Comments on the Draft Final Report

MATCH FUNDS, PERMITS, AND SUBCONTRACTS

Subtask 1.7 Match Funds

The goal of this subtask is to ensure that the Recipient obtains any match funds planned for this Agreement and applies them to the Agreement during the Agreement term.

While the costs to obtain and document match funds are not reimbursable under this Agreement, the Recipient may spend match funds for this task. The Recipient may only spend match funds during the Agreement term, either concurrently or prior to the use of CEC funds.

Exhibit A
Scope of Work

Match funds must be identified in writing, and the Recipient must obtain any associated commitments before incurring any costs for which the Recipient will request reimbursement.

The Recipient shall:

- Prepare a *Match Funds Status Letter* that documents the match funds committed to this Agreement. If no match funds were part of the proposal that led to the CEC awarding this Agreement and none have been identified at the time this Agreement starts, then state this in the letter.

  If match funds were a part of the proposal that led to the CEC awarding this Agreement, then provide in the letter:
  - A list of the match funds that identifies:
    - The amount of cash match funds, their source(s) (including a contact name, address, and telephone number), and the task(s) to which the match funds will be applied.
    - The amount of each in-kind contribution, a description of the contribution type (e.g., property, services), the documented market or book value, the source (including a contact name, address, and telephone number), and the task(s) to which the match funds will be applied. If the in-kind contribution is equipment or other tangible or real property, the Recipient must identify its owner and provide a contact name, address, telephone number, and the address where the property is located.
    - If different from the solicitation application, provide a letter of commitment from an authorized representative of each source of match funding that the funds or contributions have been secured.
- At the Kick-off meeting, discuss match funds and the impact on the project if they are significantly reduced or not obtained as committed. If applicable, match funds will be included as a line item in the progress reports and will be a topic at CPR meetings.
- Provide a *Supplemental Match Funds Notification Letter* to the CAM of receipt of additional match funds.
- Provide a *Match Funds Reduction Notification Letter* to the CAM if existing match funds are reduced during the course of the Agreement. Reduction of match funds may trigger a CPR meeting.

Products:

- Match Funds Status Letter
- Supplemental Match Funds Notification Letter *(if applicable)*
- Match Funds Reduction Notification Letter *(if applicable)*

Subtask 1.8 Permits

The goal of this subtask is to obtain all permits required for work completed under this Agreement in advance of the date they are needed to keep the Agreement schedule on track. Permit costs and the expenses associated with obtaining permits are not reimbursable under this Agreement, with the exception of costs incurred by University of California recipients. Permits must be identified and obtained before the Recipient may incur any costs related to the use of the permit(s) for which the Recipient will request reimbursement.

Exhibit A
Scope of Work

The Recipient shall:

- Prepare a *Permit Status Letter* that documents the permits required to conduct this Agreement. If no permits are required at the start of this Agreement, then state this in the letter. If permits will be required during the course of the Agreement, provide in the letter:
    - A list of the permits that identifies: (1) the type of permit; and (2) the name, address, and telephone number of the permitting jurisdictions or lead agencies.
    - The schedule the Recipient will follow in applying for and obtaining the permits.

  The list of permits and the schedule for obtaining them will be discussed at the Kick-off meeting (subtask 1.2), and a timetable for submitting the updated list, schedule, and copies of the permits will be developed. The impact on the project if the permits are not obtained in a timely fashion or are denied will also be discussed. If applicable, permits will be included as a line item in progress reports and will be a topic at CPR meetings.
- If during the course of the Agreement additional permits become necessary, then provide the CAM with an *Updated List of Permits* (including the appropriate information on each permit) and an *Updated Schedule for Acquiring Permits*.
- Send the CAM a *Copy of Each Approved Permit*.
- If during the course of the Agreement permits are not obtained on time or are denied, notify the CAM within 5 days. Either of these events may trigger a CPR meeting.

Products:

- Permit Status Letter
- Updated List of Permits *(if applicable)*
- Updated Schedule for Acquiring Permits *(if applicable)*
- Copy of Each Approved Permit *(if applicable)*

Subtask 1.9 Subcontracts

The goals of this subtask are to: (1) procure subcontracts required to carry out the tasks under this Agreement; and (2) ensure that the subcontracts are consistent with the terms and conditions of this Agreement.

The Recipient shall:

- Manage and coordinate subcontractor activities in accordance with the requirements of this Agreement.
- Incorporate this Agreement by reference into each subcontract.
- Include any required Energy Commission flow-down provisions in each subcontract, in addition to a statement that the terms of this Agreement will prevail if they conflict with the subcontract terms.
- If required by the CAM, submit a draft of each *Subcontract* required to conduct the work under this Agreement.
- Submit a final copy of each executed subcontract.
- Notify and receive written approval from the CAM prior to adding any new subcontractors (see the discussion of subcontractor additions in the terms and conditions).

Products:

- Subcontracts *(draft if required by the CAM)*

Exhibit A
Scope of Work

TECHNICAL ADVISORY COMMITTEE

Subtask 1.10 Technical Advisory Committee (TAC)

The goal of this subtask is to create an advisory committee for this Agreement. The TAC should be composed of diverse professionals. The composition will vary depending on interest, availability, and need. TAC members will serve at the CAM's discretion. The purpose of the TAC is to:

- Provide guidance in project direction. The guidance may include scope and methodologies, timing, and coordination with other projects. The guidance may be based on:
  - Technical area expertise;
  - Knowledge of market applications; or
  - Linkages between the agreement work and other past, present, or future projects (both public and private sectors) that TAC members are aware of in a particular area.
- Review products and provide recommendations for needed product adjustments, refinements, or enhancements.
- Evaluate the tangible benefits of the project to the state of California, and provide recommendations as needed to enhance the benefits.
- Provide recommendations regarding information dissemination, market pathways, or commercialization strategies relevant to the project products.
- Help set the project team's goals and contribute to the development and evaluation of its statement of proposed objectives as the project evolves.
- Provide a credible and objective sounding board on the wide range of technical and financial barriers and opportunities.
- Help identify key areas where the project has a competitive advantage, value proposition, or strength upon which to build.
- Advocate, to the extent the TAC members feel is appropriate, on behalf of the project in its effort to build partnerships, governmental support, and relationships with a national spectrum of influential leaders.
- Ask probing questions that ensure a long-term perspective on decision-making and progress toward the project's strategic goals.

The TAC may be composed of qualified professionals spanning the following types of disciplines:

- Researchers knowledgeable about the project subject matter;
- Members of trades that will apply the results of the project (e.g., designers, engineers, architects, contractors, and trade representatives);
- Public interest market transformation implementers;
- Product developers relevant to the project;
- U.S. Department of Energy research managers, or experts from other federal or state agencies relevant to the project;
- Public interest environmental groups;
- Utility representatives;
- Air district staff; and
- Members of relevant technical society committees.

The Recipient shall:

- Prepare a *List of Potential TAC Members* that includes the names, companies, physical and electronic addresses, and phone numbers of potential members. The list will be

discussed at the Kick-off meeting, and a schedule for recruiting members and holding the first TAC meeting will be developed.
- Recruit TAC members. Ensure that each individual understands member obligations and the TAC meeting schedule developed in subtask 1.11.
- Prepare a *List of TAC Members* once all TAC members have committed to serving on the TAC.
- Submit *Documentation of TAC Member Commitment* (such as Letters of Acceptance) from each TAC member.

Products:
- List of Potential TAC Members
- List of TAC Members
- Documentation of TAC Member Commitment

Subtask 1.11 TAC Meetings
The goal of this subtask is for the TAC to provide strategic guidance for the project by participating in regular meetings, which may be held via teleconference.

The Recipient shall:
- Discuss the TAC meeting schedule with the CAM at the Kick-off meeting. Determine the number and location of meetings (in-person and via teleconference) in consultation with the CAM.
- Prepare a *TAC Meeting Schedule* that will be presented to the TAC members during recruiting. Revise the schedule after the first TAC meeting to incorporate meeting comments.
- Prepare a *TAC Meeting Agenda* and *TAC Meeting Back-up Materials* for each TAC meeting.
- Organize and lead TAC meetings in accordance with the TAC Meeting Schedule. Changes to the schedule must be pre-approved in writing by the CAM.
- Prepare *TAC Meeting Summaries* that include any recommended resolutions of major TAC issues.

The TAC shall:
- Help set the project team's goals and contribute to the development and evaluation of its statement of proposed objectives as the project evolves.
- Provide a credible and objective sounding board on the wide range of technical and financial barriers and opportunities.
- Help identify key areas where the project has a competitive advantage, value proposition, or strength upon which to build.
- Advocate on behalf of the project in its effort to build partnerships, governmental support and relationships with a national spectrum of influential leaders.
- Ask probing questions that ensure a long-term perspective on decision-making and progress toward the project’s strategic goals.
- Review and provide comments to proposed project performance metrics.
- Review and provide comments to proposed project Draft Technology Transfer Plan.

Products:
- TAC Meeting Schedule (draft and final)
- TAC Meeting Agendas (draft and final)

- TAC Meeting Back-up Materials
- TAC Meeting Summaries

Subtask 1.12 Project Performance Metrics
The goal of this subtask is to finalize key performance targets for the project based on feedback from the TAC and report on final results in achieving those targets. The performance targets should be a combination of scientific, engineering, techno-economic, and/or programmatic metrics that provide the most significant indicator of the research or technology's potential success.

The Recipient shall:

- Complete and submit the project performance metrics section of the *Initial Project Benefits Questionnaire*, developed in the Evaluation of Project Benefits task, to the CAM.
- Present the draft project performance metrics at the first TAC meeting to solicit input and comments from the TAC members.
- Develop and submit a *TAC Performance Metrics Summary* that summarizes comments received from the TAC members on the proposed project performance metrics. The *TAC Performance Metrics Summary* will identify:
    - TAC comments the Recipient proposes to incorporate into the *Initial Project Benefits Questionnaire*, developed in the Evaluation of Project Benefits task.
    - TAC comments the Recipient does not propose to incorporate with and explanation why.
- Develop and submit a *Project Performance Metrics Results* document describing the extent to which the Recipient met each of the performance metrics in the *Final Project Benefits Questionnaire*, developed in the Evaluation of Project Benefits task.
- Discuss the *Project Performance Metrics Results* at the Final Meeting.

Products:

- TAC Performance Metrics Summary
- Project Performance Metrics Results

Exhibit A
Scope of Work

IV. TECHNICAL TASKS

*Products that require a draft version are indicated by marking **"(draft and final)"** after the product name in the "Products" section of the task/subtask. If "(draft and final)" does not appear after the product name, only a final version of the product is required.* ***Subtask 1.1 (Products)*** *describes the procedure for submitting products to the CAM.*

TASK 2: DEVELOP SITE AND MICROGRID DESIGN INTEGRATING LDES TECHNOLOGIES

The goal of this task is to complete the engineering design for installation and integration of the LDES technologies and microgrid components including all electrical, civil, structural, architectural, and miscellaneous items required to develop a complete Issued for Construction set of design drawings.

The Recipient shall:

- Develop and submit *Issued for Construction Drawings* for review that include but are not limited to the following:
    - Hardware design and specifications for the LDES technologies and microgrid components
    - Anticipated construction and interconnection timelines
    - All necessary permits filed for building, interconnection, and back up generation
- Conduct TAC Meeting #1 per subtask 1.10
    - Document, submit, and discuss these tasks and lessons learned during the TAC meeting with the TAC and the CAM
- Prepare a draft and final *Design Report* that includes but is not limited to the following.
    - Summary of all planned operational use cases for the LDES and microgrid over the course of the project
    - Schematics and integration details
    - Electrical design
    - Definition of schematic symbols and data entry types
    - Documentation of the capabilities of the battery management system(s)
    - System documentation
- Obtain approval and provide a *Copy of Notice to Proceed* from the authorities having jurisdiction (AHJ)
- Prepare a *Design Report Presentation (PowerPoint)* which will include the design plans and summarize and highlight the *Design Report* and present at a *Design Report* meeting.

Products:

- Issued for Construction Drawings
- Design Report (Draft and Final)
- Copy of Notice to Proceed
- Design Report Presentation (PowerPoint)

TASK 3: PROCURE EQUIPMENT AND MATERIALS FOR LDES SYSTEM

The goal of this task is to procure, track and manage logistics for delivery of the 5MW/20MWh combined LDES technologies to the demonstration site.

The Recipient shall:

- Develop a detailed *Master List of Equipment and Materials* for the technologies
- Receive written approval of *Master List of Equipment and Materials* from CAM before placing purchase order for technologies
- Issue purchase orders based on approved *Master List of Equipment and Materials*
- Coordinate delivery of technologies to the project demonstration site
- Confirm and document receipt of the technologies to facility
- Develop and submit *Supplier-Specific Payment Schedules* for written approval by
- CAM reflecting a milestone process for purchasing technologies and associated equipment. This will include an explicit schedule for reimbursement of specific retention costs.
- Assume ownership of all systems, equipment, and materials ("Project") upon verification of successful systems commissioning and project operation.
- Prepare a *CPR Report #1* and participate in CPR Meeting, per subtask 1.3. Report shall also include:
    - Equipment and materials purchase orders

Products:

- Master List of Equipment and Materials
- Supplier Specific Payment Schedules
- CPR Report #1

TASK 4: INTEGRATE CONTROL ARCHITECTURE, INSTALL, PRE-ENERGIZE, AND TEST TECHNOLOGIES

The goal of this task is to fully integrate the Charge Bliss microgrid controller with all systems and install the combined photovoltaic and LDES technologies. Testing will be completed up to the point of commissioning.

The Recipient shall:

- Install all equipment at the demonstration site, including but not limited to the LDES technologies, solar photovoltaic generation, balance of systems, and controls
- Make appropriate electrical connections to utility distribution system
- Receive final approval for interconnection from the utility providing service
- Prepare a draft and final *Equipment Testing and Readiness Report* that includes but is not limited to the following:
    - Specific pre-energization testing and evaluation performed on all components to confirm proper functionality
    - Testing data sheets that verify all equipment was evaluated and tested according to established procedures to ensure all equipment and individual system components are safe to energize and will function as designed
- Participate in final inspection and obtain *Final Installation Inspection Letter* from the AHJ or its representative, confirming Mechanical Completion of LDES Systems and System Readiness

Products:

- Equipment Testing and Readiness Report (Draft and Final)
- Final Installation Inspection Letter

TASK 5: TEST AND COMMISSION PROJECT SYSTEMS
The goals of this task are to test each major component and system individually and then together as one microgrid system, to complete commissioning, and to receive permission to operate.

The Recipient shall:

- Execute a LDES acceptance testing and commissioning plan and create a *Project Performance Report* including the following:
  - Results of subsystem and system verification tests
  - *Acceptance Test Result(s)* for each subsystem as indicated
  - Test results of full system performance verification
  - Test results microgrid controls integration
- Provide a *Systems Readiness Certification*
- Achieve *Authority to Operate* by the AHJ or its representative and provide a copy of approval documentation.
- Conduct TAC Meeting #2 per subtask 1.10
  - Document, submit, and discuss this tasks lessons learned during the TAC meeting with the TAC and the CAM.
- Prepare a *CPR Report #2* and participate in CPR Meeting, per subtask 1.3

Products:

- Project Performance Report(s)
- Acceptance Test Result(s)
- Systems Readiness Certification
- Authority to Operate Letter
- CPR Report #2

TASK 6: OPERATE LDES AS PART OF A MICROGRID TO SUPPORT SITE DURING OUTAGE EVENTS; REDUCE PEAK DEMAND
This task will demonstrate how the LDES/microgrid will automatically switch between normal and parallel operation during outages utilizing 100 percent renewable energy for 20+ continuous hours as well as routinely reduce peak coincident loads.

The Recipient shall:

- Develop a draft and final *Microgrid Sequence of Operation Plan*
  - Define conditions under which systems should island
  - Program sequence of microgrid systems isolation and restart
  - Set conditional prioritization schema for solar, batteries, and loads
  - Define limitations on minimum and maximum duration of support
  - Incorporate grid resynchronization procedures
- Test the LDES and microgrid under the following use cases both while grid connected and while islanded:
  - 1-2MW discharge for 20 hrs.
  - 100 percent renewable energy-based operation with on-site generation
  - Peak load reduction
  - Ancillary services program participation (where feasible)
- Prepare a *Microgrid Sequence of Operations Report*

- Prepare a *Microgrid System Performance Report*

Products:

- Microgrid Sequence of Operation Plan (Draft and Final)
- Microgrid Sequence of Operations Report
    - Microgrid System Performance Report

TASK 7: MEASUREMENT AND VERIFICATION

The team will measure and verify the performance of the microgrid and LDES technologies and compare to projected performance.

The Recipient shall:

- Develop a *Measurement and Verification Plan*, prior to initiating measurement period, that includes but is not limited to the following.
    - Set up of measurement devices and data collection platform
    - Length of measurement and verification period
    - Parameters that will be measured
    - Performance metrics that will be used
- Prepare an *Initial Measurement, Verification & Performance Evaluation Report* that includes but is not limited to the following.
    - Summary of data collected and period of data collection
    - Comparison of predicted results and actual results
- Submit updated *Annual Measurement and Verification Reports* summarizing performance of the LDES systems and microgrid, including but not limited to the following:
    - Summary of data collected and period of data collection
    - Comparison of predicted results and actual results
- Submit updated *Annual Measurement and Verification Reports* summarizing performance of the LDES systems and microgrid, including but not limited to the following:
    - Conduct TAC Meeting #3 per subtask 1.10
    - Document, submit, and discuss this tasks lessons learned during the TAC meeting with the TAC and the CAM.
- Prepare a *CPR Report #3* and participate in CPR Meeting, per subtask 1.3

Products:

- Measurement and Verification Plan (Draft and Final)
- Initial Measurement and Verification & Performance Evaluation Report
- Annual Measurement and Verification Reports
- CPR Report #3

TASK 8: EVALUATION OF PROJECT BENEFITS

The goal of this task is to report the benefits resulting from this project.

The Recipient shall:

- Complete *the Initial Project Benefits Questionnaire*. The Initial Project Benefits Questionnaire shall be initially completed by the Recipient with ‘Kick-off’ selected for the ‘Relevant data collection period’ and submitted to the CAM for review and approval.

- Complete the *Annual Survey* by January 31st of each year. The Annual Survey includes but is not limited to the following information:
    - Technology commercialization progress
    - New media and publications
    - Company growth
    - Follow-on funding and awards received
- Complete the *Final Project Benefits Questionnaire*. The Final Project Benefits Questionnaire shall be completed by the Recipient with 'Final' selected for the 'Relevant data collection period' and submitted to the CAM for review and approval.
- Respond to CAM questions regarding the questionnaire drafts.
- Complete and update the project profile on the CEC's public online project and recipient directory on the Energize Innovation website (www.energizeinnovation.fund), and provide *Documentation of Project Profile on EnergizeInnovation.fund*, including the profile link.
- If the Prime Recipient is an Innovation Partner on the project, complete and update the organizational profile on the CEC's public online project and recipient directory on the Energize Innovation website (www.energizeinnovation.fund), and provide *Documentation of Organization Profile on EnergizeInnovation.fund*, including the profile link.

Products:

- Initial Project Benefits Questionnaire
- Annual Survey(s)
- Final Project Benefits Questionnaire
- Documentation of Project Profile on EnergizeInnovation.fund
- Documentation of Organization Profile on EnergizeInnovation.fund

TASK 9: TECHNOLOGY/KNOWLEDGE TRANSFER ACTIVITIES

The goal of this task is to ensure the technological learning that resulted from the demonstration(s) is captured and disseminated to the range of professions that will be responsible for future deployments of this technology or similar technologies.

The Recipient Shall:

- Develop and submit a *Project Case Study Plan* that outlines how the Recipient will document the planning, construction, commissioning, and operation of the technology or system being demonstrated. The Project Case Study Plan should include:
    - An outline of the objectives, goals, and activities of the case study.
    - The organization that will be conducting the case study and the plan for conducting it.
    - A list of professions and practitioners involved in the technology's deployment.
    - Specific activities the recipient will take to ensure the learning that results from the project is disseminated to those professions and practitioners.
    - Presentations/webinars/training events to disseminate the results of the case study.
- Present the draft *Project Case Study Plan* to the TAC for review and comment.

- Develop and submit a *Summary of TAC Comments* that summarizes comments received from the TAC members on the draft *Project Case Study Plan*. This document will identify:
    - TAC comments the recipient proposes to incorporate into the final *Technology Transfer Plan*.
    - TAC comments the recipient does not propose to incorporate with and explanation why.
- Submit the final *Project Case Study Plan* to the CAM for approval.
- Execute the final Project Case Study Plan and develop and submit a Project Case Study.
- When directed by the CAM, develop presentation materials for a CEC sponsored conference/workshop(s) on the project.
- When directed by the CAM, participate in knowledge sharing event(s) sponsored by the California CEC.
- Provide at least (6) six High Quality Digital Photographs (minimum resolution of 1300x500 pixels in landscape ratio) of pre and post technology installation at the project sites or related project photographs.

Products:

- Technology Transfer Plan (draft and final)
- Summary of TAC Comments
- Technology Transfer Summary (draft and final)
- High Quality Digital Photographs

V. PROJECT SCHEDULE

Please see the attached Excel spreadsheet.