

Exhibit A Scope of Work

I. TASK ACRONYM/TERM LISTS

A. Task List

Task #	CPR ¹	Task Name
1		General Project Tasks
2		Select Relocation Sites and Prepare Burrowing Owls for Study
3	X	Comparative Assessment of Mitigation Methods for Burrowing Owls Impacted by Development
4		Evaluation of Project Benefits
5		Technology/Knowledge Transfer Activities

B. Acronym/Term List

Acronym/Term	Meaning
BUOW	Burrowing owl
CAM	Commission Agreement Manager
CAO	Commission Agreement Officer
CDFW	California Department of Fish & Wildlife
CPR	Critical Project Review
MSHCP	Multi-Species Habitat Conservation Plan
NCCP	Natural Community Conservation Plan
TAC	Technical Advisory Committee
USFWS	U.S. Fish & Wildlife Service

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

A. Purpose of Agreement

The purpose of this Agreement is to reduce the impact of renewable energy development on the Western burrowing owl (BUOW; *Athene cunicularia hypugaea*) and to provide recommendations about the safest and most cost effective mitigation method. This will be accomplished by comparing the effectiveness of and developing improvements to existing mitigation methods.

B. Problem/ Solution Statement

Problem

In California, burrowing owls have been designated with the conservation status of “Species of Special Concern”, mainly due to habitat loss. Renewable energy-generation projects are a necessary component of the State of California’s energy policy and comprise a rapid and increasing source of development throughout much of California, an area that largely overlaps the distribution of the BUOW. With planned facility expansions in BUOW habitat, renewable

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.

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energy projects potentially represent a major contributing factor in the continued decline of the BUOW. Translocation away from project sites is an important mitigation method for BUOWs impacted by development, but there is significant uncertainty around the effectiveness of the main two approaches (active and passive translocation) due to the difficulty of tracking owls long enough to determine post-translocation fates. “Passive relocation” involves excluding owls from their burrows, and then collapsing the burrows once owls are absent. Artificial burrows may be installed nearby to encourage rapid resettlement and possibly reduce mortality risks associated with relocation to a completely new area. By contrast, “active relocation” involves capturing owls at their burrows, moving them offsite, holding owls temporarily in a large field enclosure, and then releasing owls from their enclosures. Active relocation release sites are typically supplemented with artificial burrows to encourage owl retention.

Solution

The project will compare the effectiveness of active and passive translocation of owls away from project sites, utilizing state-of-the-art tracking equipment that makes determining post-translocation fates feasible. The recipient also will recommend improvements to existing translocation methods tested using a robust experimental framework. The product will contain quantitative, defensible information about the safest and most effective translocation method for this Species of Special Concern.

C. Goals and Objectives of the Agreement

Agreement Goals

The goals of this Agreement are to:

- Improve wildlife mitigation actions used for BUOWs impacted by renewable energy development to decrease project impacts on the species.
- Provide data on burrowing owl movements and habitat use that will inform collision risk models and site selection decisions for renewable energy-generating facilities.

Ratepayer Benefits:² This Agreement will result in the ratepayer benefit of lower costs by making mitigation more cost-effective, reducing obstacles to renewable energy generation in southern California counties (e.g., Riverside and Imperial), and ensuring a healthy ecosystem for nearby human communities. It is important to determine the best method for relocating BUOW away from energy-generating facilities, including in the developmental phase when the physical footprint may impact owls and burrows directly and also after operation commences and there is an unacceptable fatality rate associated with proximate energy facilities. New scientific knowledge on habitat suitability and movement patterns will guide site selection and management in the future, reducing mitigation costs. Implementation of more effective mitigation practices may prevent listing under the California Endangered Species Act and the federal Endangered Species Act if the decline of BUOW can be arrested.

² California Public Resources Code, Section 25711.5(a) requires projects funded by the Electric Program Investment Charge (EPIC) to result in ratepayer benefits. The California Public Utilities Commission, which established the EPIC in 2011, defines ratepayer benefits as greater reliability, lower costs, and increased safety (See CPUC “Phase 2” Decision 12-05-037 at page 19, May 24, 2012, http://docs.cpuc.ca.gov/PublishedDocs/WORD_PDF/FINAL_DECISION/167664.PDF).

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Technological Advancement and Breakthroughs:³ This Agreement will lead to technological advancement and breakthroughs to overcome barriers to the achievement of the State of California's statutory energy goals by increasing the effectiveness of conservation actions designed to mitigate renewable energy impacts on Western BUOW. This will be achieved by evaluating the relative effectiveness of primary translocation methods in an experimental framework. Improvements to the effectiveness of existing translocation methods will also be tested experimentally.

Agreement Objectives

The objectives of this Agreement are to:

- Record and evaluate BUOW dispersal, mortality, and reproductive output in response to passive and active relocations, as compared to burrowing owls not planned for relocation (controls);
- Evaluate whether the addition of experimentally planted conspecific cues (visual and acoustic stimuli) improves owl passive and active post-translocation settlement; and
- Determine the most effective mitigation method used for BUOWs impacted by development and recommend improvements.

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)**. 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. 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.

³ California Public Resources Code, Section 25711.5(a) also requires EPIC-funded projects to lead to technological advancement and breakthroughs to overcome barriers that prevent the achievement of the state's statutory and energy goals.

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- 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 Energy Commission's 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 or CD-ROM.

The following describes the accepted formats for electronic data and documents provided to the Energy Commission 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.
- Documents intended for public distribution will be in PDF file format.
- The Recipient must also provide the native Microsoft file format.
- Project management documents will be in Microsoft 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:

- Microsoft ASP.NET framework (version 3.5 and up). Recommend 4.0.
- Microsoft 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.
- SQL (Structured Query Language).

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- Microsoft SQL Server 2008, Stored Procedures. Recommend 2008 R2.
- Microsoft 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. The CAM will consult with the Energy Commission's Information Technology 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 Energy Commission 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;
- Administrative products (subtask 1.1);
- 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 and invoices (subtask 1.5);
 - Final Report (subtask 1.6);
 - Technical Advisory Committee meetings (subtasks 1.10 and 1.11); and
 - Any other relevant topics.
- Provide an *Updated Project Schedule*, *List of Match Funds*, and *List of Permits*, as needed to reflect any changes in the documents.

The CAM shall:

- Designate the date and location of the meeting.

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- Send the Recipient a *Kick-off Meeting Agenda*.

Recipient Products:

- Updated Project Schedule (*if applicable*)
- Updated List of Match Funds (*if applicable*)
- Updated List of Permits (*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 Energy Commission 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 Energy Commission 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 Energy Commission.

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 Energy Commission, 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 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.
- Submit the CPR Report along with any other *Task Products* that correspond to the technical task for which the CPR meeting is required (i.e., if a CPR meeting is required for Task 2, submit the Task 2 products along with the CPR Report).
- 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* and 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

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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)
- Task Products (draft and/or final as specified in the task)

CAM Products:

- CPR Agenda
- List of Expected CPR Participants
- Schedule for Providing a Progress Determination
- 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 Energy Commission 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 state-owned equipment.
 - Need to file a Uniform Commercial Code Financing Statement (Form UCC-1) regarding the Energy Commission's interest in patented technology.
 - The Energy Commission'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.

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- 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 *All Draft and Final Written Products* on a CD-ROM or USB memory stick, organized by the tasks in the Agreement.

Products:

- Final Meeting Agreement Summary (*if applicable*)
- Schedule for Completing Agreement Closeout Activities
- All Draft and Final Written 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 Fund 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. The CAM will review the Final Report, which will be due at least **two months** before the Agreement end date. When creating the Final Report Outline and the Final Report, the Recipient must use the 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 *Style Manual* provided by the CAM. (*See Task 1.1 for requirements for draft and final products.*)

Recipient Products:

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- Final Report Outline (draft and final)

CAM Product:

- 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, 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)
 - Ensure that the document is written in the third person.
 - Ensure that the Executive Summary is understandable to the lay public.
 - Briefly summarize the completed work. Succinctly describe the project results and whether or not the project goals were accomplished.
 - Identify which specific ratepayers can benefit from the project results and how they can achieve the benefits.
 - If it's necessary to use a technical term in the Executive Summary, provide a brief definition or explanation when the technical term is first used.
 - Follow the Style Guide format requirements for headings, figures/tables, citations, and acronyms/abbreviations.
 - Ensure that the document omits subjective comments and opinions. However, recommendations in the conclusion of the report are allowed.

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- Include a brief description of the project results in the Abstract.
- 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
- Consider incorporating all CAM comments into the Final Report. 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 Final Report 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.
- Submit one bound copy of the *Final Report* to the CAM along with *Written Responses to Comments on the Draft Final Report*.

Products:

- Final Report (draft and final)
- Written Responses to Comments on the Draft 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 Energy Commission funds. 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 Energy Commission 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 Energy Commission 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)

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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.

- A copy of 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.

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.

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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 the 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*)

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.

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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.

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- Prepare *TAC Meeting Summaries* that include any recommended resolutions of major TAC issues.

Products:

- TAC Meeting Schedule (draft and final)
- TAC Meeting Agendas (draft and final)
- TAC Meeting Back-up Materials
- TAC Meeting Summaries

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IV. TECHNICAL TASKS

TASK 2 Select Relocation Sites and Prepare Burrowing Owls for Study

The goals of this task are to: (1) select BUOWs for a comparison of mitigation methods used for BUOW that may be impacted by development (e.g., renewable energy projects): active translocation, passive relocation, and control; (2) select relocation sites for the study; and (3) prepare the owls and the sites for the study. Some of the relocation activities will be conducted by others, as part of existing mitigation requirements to relocate owls before development. In this case, the Recipient will be able to conduct the research activities as part of an existing development effort. However, the Recipient may need to supplement some relocation efforts independent of existing development work to produce sufficient numbers of owls in the active, passive and control groups.

The Recipient shall:

- Coordinate with developers, staff from existing projects, regulatory agencies (California Department of Fish and Wildlife (CDFW) and U.S. Fish & Wildlife Service (USFWS)), and land managers/project partners (Western Riverside County Regional Conservation Authority and Coachella Valley Conservation Commission) to select BUOWs and relocation sites for use in this study.
 - BUOWs will be chosen such that the telemetry equipment would be less than 5% of the owl's body weight.
 - Current sites that BUOWs inhabit will be chosen using geographic criteria. Sites will most likely be within the Western Riverside County Multi-Species Habitat Conservation Plan (MSHCP)/Natural Community Conservation Plan (NCCP) boundaries and the Coachella Valley MSHCP/NCCP boundaries in Riverside County, the Imperial Irrigation District lands in Imperial County, and the Sonny Bono National Wildlife Refuge lands in Imperial County.
 - Relocation sites will be chosen taking conservation land status (i.e., conservation easement managed for long-term conservation of habitat and/or species, or preserved areas such as a national wildlife refuge), CDFW guidelines⁴, and geography into consideration. It is anticipated that these conservation lands would typically be associated with and inside the boundaries of the Western Riverside County Multi-Species Habitat Conservation Plan (MSHCP)/Natural Community Conservation Plan (NCCP) and the Coachella Valley MSHCP/NCCP). While Riverside and Imperial Counties are the primary areas for this study, BUOW relocations may occur in San Bernardino and San Diego Counties as potential secondary sites.
 - Obtain approval for relocation sites from CDFW and USFWS.
- Follow requirements and protocols for handling owls pursuant to the Recipient's permits. Activities will be conducted under the oversight and authority of state and federal permits:
 - CDFW Scientific Collecting Permit

⁴ California Department of Fish and Game. 2012. Staff report on burrowing owl mitigation. State of California, Natural Resources Agency. Retrieved from: <http://www.dfg.ca.gov/wildlife/nongame/docs/BUOWStaffReport.pdf>. CDFW will continue to provide informal guidance to researchers conducting this study during planning and implementation.

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- USFWS Migratory Bird Treaty Act (MBTA) Permit: USFWS Migratory Birds Division will approve the Migratory Bird Treaty Act (MBTA) permit. This permit is required for active relocations only. Due to the permitting process for the MBTA permit, this permit will be approved once specific relocation sites are selected.
- Federal Bird Banding Permit: This permit is approved and issued by the Department of the Interior, U.S. Geological Survey through the Patuxent Wildlife Research Center, Bird Banding Laboratory.
- Capture at least 50 BUOWs (32 with Energy Commission funds, the remainder with match funds) before burrow eviction, outfit them with identification bands and solar satellite telemetry equipment, and prepare for relocation. USFWS will assist with relocations in all counties included in the project. Western Riverside County Regional Conservation Authority and Coachella Valley Conservation Commission will assist throughout this task.
 - At Original Burrow Site for Passive Relocation:
 - Trap owls using burrow traps and bow-nets
 - Outfit owls with telemetry equipment, band, and collect morphological measurements (e.g., wing length)
 - Release owl at its original burrow site
 - Install one-way door excluder at burrow entrance (1 to several days later)
 - Confirm owl is not inside burrow
 - Collapse burrow if part of development project; otherwise leave excluders in place
 - At New Site for Passive Relocation:
 - Build and install artificial burrows at new location as close as possible to original burrow (within 100 meters ideally); do so approximately 3 weeks prior to any exclusion at original burrow (if feasible, otherwise as much in advance as possible);
 - Place conspecific auditory and visual cues at artificial burrow at new location (only for those included in this experimental treatment group)
 - At Original Burrow Site for Active Translocation:
 - Trap owls using burrow traps and bow-nets
 - Outfit owls with telemetry equipment, band, and collect morphological measurements (e.g., wing length)
 - Transport owls to new site where hacking cage is located
 - Distance of translocation site may be several miles away (farther appears to be better but an optimal distance is not known; owls move among different populations)
 - Collapse burrow if part of development project; otherwise leave excluders in place
 - At New Site for Active Translocation:
 - Install temporary hacking cage at new (translocation) site prior to capture of owls at original site
 - Place owls in hacking cage after capture and transport from original site

Exhibit A Scope of Work

- Hold owls in hacking cage for a minimum of 30 days to establish site fidelity to the new area
- Place auditory and visual cues around hacking cage release site (only for those included in this experimental treatment group)
- Release owls after holding period.

- Control Group Owls:
 - Establish control group owls in as close proximity as possible to passive relocation and active translocation group owls
 - Trap control owls at their burrows
 - Outfit owls with telemetry equipment, band, and collect morphological measurements (e.g., wing length)
 - Release owls at their burrow site

- Artificial Burrows for Both Passive and Active Relocation Groups:
 - Build artificial burrows in new locations, typically using backhoe to dig small trench and then backfill after the burrows are inserted. Blend the burrow into the natural landscape so there is little to no visible sign of disturbance to the land.

- Prepare *Relocation Preparation Report* that documents the selection criteria and the steps taken to prepare for the experimental study

Products:

- Relocation Preparation Report

TASK 3 Comparative Assessment of Mitigation Methods for Burrowing Owls Impacted by Development

The goals of this task are to: (1) monitor responses of BUOWs to active and passive relocation strategies with and without cues; (2) collect habitat covariate data; (3) quantify the outcomes of BUOWs impacted by and unaffected by development; and (4) use those results to recommend improved BUOW mitigation methods. CDFW will provide guidance in this task. USFWS will assist and provide guidance. Western Riverside County Regional Conservation Authority and Coachella Valley Conservation Commission will assist the Recipient in implementing this task.

The Recipient shall:

- Monitor owls for the length of the study, using protocols⁵ that include, but are not limited to, measurements of:
 - Dispersal distance and movement via satellite telemetry data transmission and computer downloads;
 - Reproductive output;
 - Survival;
- Collect habitat covariate data using a variety of techniques, including on-the-ground visual surveys, Unmanned Aerial System (UAS) with ultra-high resolution remote

⁵ The protocols will be based on a combination of resources including the CDFW 2012 Staff Report on Burrowing Owl Mitigation, the Western Riverside County MSHCP Draft Burrowing Owl Relocation Standards, pertinent peer-reviewed literature of burrowing owl research, including similar studies on relocation, and the professional expertise of the research personnel.

Exhibit A Scope of Work

sensors, and/or existing satellite geographic information system data, that include, but are not limited to, measurements of:

- Topography;
- Vegetation characteristics (species, density, height);
- Land use and condition; and
- Burrow distribution and density.
- Analyze field, habitat, and satellite telemetry data. Primary analyses will include, but are not limited to:
 - Differences between BUOW groups that have been passively relocated vs. actively translocated vs. left in place (not translocated);
 - Differences between relocated owls in the presence of experimentally planted conspecific cues at release sites vs. lacking conspecific cues at release sites; and
 - Differences between experimental responses based on habitat and geography.
- Remove equipment and restore sites to the extent feasible and appropriate as directed by the CAM as advised by CDFW and USFWS.
 - Original burrows associated with development would be collapsed or destroyed so excluders would be removed under responsibility of the developer.
 - For artificial burrows that are part of a development project where loss of habitat is permanent, the artificial burrows are considered permanent and the responsibility of the project developer to monitor and maintain in perpetuity or as long as owls are using them.
 - For original burrows that are part of an experimental relocation (i.e., no development, just experimental manipulation), burrow excluders would be considered temporary as they could be removed by the end of the study. Artificial burrows installed as part of the experimental relocation would be considered permanent if owls were using them. If no owls are using them, they would be removed, if needed.
 - To the extent feasible, BUOWs will be recaptured at the end of the study so that their telemetry units can be removed. Removals will be dependent on the location of the owls at the end of the study, as the researchers may not have access to the lands the owls are using (e.g., private property).
- Prepare *CPR Reports* in accordance with subtask 1.3 (CPR Meetings)
- Participate in CPR meetings
- Prepare an *Interim Burrowing Owl and Habitat Monitoring Report*, describing experimental design, type of data collected, how it is stored and managed, and initial summaries of data results
- Prepare a *Comparative Assessment of Mitigation Methods Report*, describing the analyses performed, the findings, and recommendations for improved mitigation methods based on the results

Products:

- CPR Report #1 and #2
- Interim Burrowing Owl and Habitat Monitoring Report
- Final Comparative Assessment of Mitigation Methods Report

Exhibit A Scope of Work

TASK 4 Evaluation of Project Benefits

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

The Recipient shall:

- Complete three Project Benefits Questionnaires that correspond to three main intervals in the Agreement: (1) *Kick-off Meeting Benefits Questionnaire*; (2) *Mid-term Benefits Questionnaire*; and (3) *Final Meeting Benefits Questionnaire*.
- Provide all key assumptions used to estimate projected benefits, including targeted market sector (e.g., population and geographic location), projected market penetration, baseline and projected energy use and cost, operating conditions, and emission reduction calculations. Examples of information that may be requested in the questionnaires include:
 - For Product Development Projects and Project Demonstrations:
 - Published documents, including date, title, and periodical name.
 - Estimated or actual energy and cost savings, and estimated statewide energy savings once market potential has been realized. Identify all assumptions used in the estimates.
 - Greenhouse gas and criteria emissions reductions.
 - Other non-energy benefits such as reliability, public safety, lower operational cost, environmental improvement, indoor environmental quality, and societal benefits.
 - Data on potential job creation, market potential, economic development, and increased state revenue as a result of the project.
 - A discussion of project product downloads from websites, and publications in technical journals.
 - A comparison of project expectations and performance. Discuss whether the goals and objectives of the Agreement have been met and what improvements are needed, if any.
 - Additional Information for Product Development Projects:
 - Outcome of product development efforts, such copyrights and license agreements.
 - Units sold or projected to be sold in California and outside of California.
 - Total annual sales or projected annual sales (in dollars) of products developed under the Agreement.
 - Investment dollars/follow-on private funding as a result of Energy Commission funding.
 - Patent numbers and applications, along with dates and brief descriptions.
 - Additional Information for Product Demonstrations:
 - Outcome of demonstrations and status of technology.
 - Number of similar installations.
 - Jobs created/retained as a result of the Agreement.
 - For Information/Tools and Other Research Studies:
 - Outcome of project.
 - Published documents, including date, title, and periodical name.

Exhibit A Scope of Work

- A discussion of policy development. State if the project has been cited in government policy publications or technical journals, or has been used to inform regulatory bodies.
- The number of website downloads.
- An estimate of how the project information has affected energy use and cost, or have resulted in other non-energy benefits.
- An estimate of energy and non-energy benefits.
- Data on potential job creation, market potential, economic development, and increased state revenue as a result of project.
- A discussion of project product downloads from websites, and publications in technical journals.
- A comparison of project expectations and performance. Discuss whether the goals and objectives of the Agreement have been met and what improvements are needed, if any.
- Respond to CAM questions regarding responses to the questionnaires.

The Energy Commission may send the Recipient similar questionnaires after the Agreement term ends. Responses to these questionnaires will be voluntary.

Products:

- Kick-off Meeting Benefits Questionnaire
- Mid-term Benefits Questionnaire
- Final Meeting Benefits Questionnaire

TASK 5 Technology/Knowledge Transfer Activities

The goal of this task is to develop a plan to make the knowledge gained, experimental results, and lessons learned available to the public and key decision makers.

The Recipient shall:

- Prepare an *Initial Fact Sheet* at start of the project that describes the project. Use the format provided by the CAM.
- Prepare a *Final Project Fact Sheet* at the project's conclusion that discusses results. Use the format provided by the CAM.
- Prepare a *Technology/Knowledge Transfer Plan* that includes:
 - An explanation of how the knowledge gained from the project will be made available to the public, including the targeted market sector and potential outreach to end users, utilities, regulatory agencies, and others.
 - A description of the intended use(s) for and users of the project results.
 - Published documents, including date, title, and periodical name.
 - Copies of documents, fact sheets, journal articles, press releases, and other documents prepared for public dissemination. These documents must include the Legal Notice required in the terms and conditions. Indicate where and when the documents were disseminated.
 - A discussion of policy development. State if project has been or will be cited in government policy publications, or used to inform regulatory bodies.
 - The number of website downloads or public requests for project results.

Exhibit A Scope of Work

- Additional areas as determined by the CAM.
- Conduct technology transfer activities in accordance with the Technology/Knowledge Transfer Plan. These activities will be reported in the Progress Reports.
- When directed by the CAM, develop *Presentation Materials* for an Energy Commission-sponsored conference/workshop on the results of the project.
- When directed by the CAM, participate in annual EPIC symposium sponsored by the California Energy Commission.
- Provide at least six *High Quality Digital Photographs (Minimum Resolution of 1300x500 Pixels in Landscape Ratio)* of *Pre and Post Technology Installation at the Project Sites*.
- Provide signed photo waiver release form by the Energy Commission.
- Prepare a *Technology/Knowledge Transfer Report* on technology transfer activities conducted during the project.

Products:

- Initial Fact Sheet (draft and final)
- Final Project Fact Sheet (draft and final)
- Presentation Materials (draft and final)
- High Quality Digital Photographs (Minimum Resolution of 1300x500 Pixels) of the Pre and Post Technology Installation at the Project Sites
- Technology/Knowledge Transfer Plan (draft and final)
- Technology/Knowledge Transfer Report (draft and final)

V. PROJECT SCHEDULE

Please see the attached Exhibit A Attachment A-1.

STATE OF CALIFORNIA

STATE ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION - RE: SAN DIEGO ZOO GLOBAL

RESOLVED, that the State Energy Resources Conservation and Development Commission (Energy Commission) adopts the staff CEQA findings contained in the Agreement or Amendment Request Form (as applicable); and

RESOLVED, that the Energy Commission approves Agreement EPC-15-040 from GFO-15-309 with Zoological Society of San Diego dba San Diego Zoo Global for a \$598,671 grant to study and evaluate effective mitigation strategies when renewable energy-generating facilities are built in burrowing owl habitats. Transmitters attached to owls will track their movement and habitat preferences, which can inform how and where to best relocate owls displaced by energy developments; and

FURTHER BE IT RESOLVED, that the Executive Director or his/her designee shall execute the same on behalf of the Energy Commission.

CERTIFICATION

The undersigned Secretariat to the Commission 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 California Energy Commission held on May 17, 2016.

AYE: [List of Commissioners]

NAY: [List of Commissioners]

ABSENT: [List of Commissioners]

ABSTAIN: [List of Commissioners]

Cody Goldthrite,
Secretariat