

**Federal ID Number** 

81-1914243

#### A) New Agreement # EPC-19-029

B) Division	Agreement Manager:	MS-	Phone
ERDD	Chuck Gentry	43	916-327-1528

## C) Recipient's Legal Name

Hell's Kitchen Geothermal LLC

#### D) Title of Project

Improved Silica Removal for Enhanced Geothermal Plant Performance

## E) Term and Amount

Start Date	End Date	Amount
6/15/2020	12/29/2023	\$ 2,999,599

# F) Business Meeting Information

ARFVTP agreements \$75K and under delegated to Executive Director

Proposed Business Meeting Date 6/10/2020 Consent Discussion

Business Meeting Presenter Chuck Gentry Time Needed: 5 minutes

Please select one list serve. EPIC (Electric Program Investment Charge)

# Agenda Item Subject and Description:

HELL'S KITCHEN GEOTHERMAL LLC. Proposed resolution adopting California Environmental Quality Act Findings for Hell's Kitchen Geothermal, LLC's Improved Silica Removal for Enhanced Geothermal Plant Performance project and approving grant agreement EPC-19-029 with Hell's Kitchen.

I. CALIFORNIA ENVIRONMENTAL QUALITY ACT FINDINGS. Findings that, based on the lead agency Imperial County's (County) Final Programatic Environmental Impact Report (EIR), adopted Statement of Overriding Considerations, and the County's Resolution No. 2015-150 approving and adopting the EIR and Statement of Overriding Considerations, as based on the County's adopted Addendum to the EIR, Conditional Use Permit #16-0001, and the County's Resolution Nos. 2017-0037 and 2017-038, approving and adopting the Addendum and Conditional Use Permit, the work under the proposed agreement presents no new significant or substantially more severe environmental impacts beyond those already considered and mitigated by the lead agency.

II. HELL'S KITCHEN GEOTHERMAL'S Improved Silica Removal for Enhanced Geothermal Plant Performance. Proposed resolution approving Agreement EPC-19-029 with Hell's Kitchen Geothermal, LLC for a \$2,999,599 grant to develop and demonstrate a fundamentally new and innovative method for managing silica in geothermal operations. The new technology, Geothermal Micropillar Enabled Particle Separator (GMEPS) systematically separates silica particles from the geothermal brine based on their size as they flow through a series of carefully positioned staggered/offset posts. This technology has the potential to lower both the capital and operational costs of brine management at geothermal plants.

CALIFORNIA ENERGY COMMISSION



# G) California Environmental Quality Act (CEQA) Compliance

- 1. Is Agreement considered a "Project" under CEQA?
  - $\boxtimes$  Yes (skip to question 2)
  - No (complete the following (PRC 21065 and 14 CCR 15378)):

Explain why Agreement is not considered a "Project":

- 2. If Agreement is considered a "Project" under CEQA:
  - a) 🗌 Agreement **IS** exempt.
    - Statutory Exemption. List PRC and/or CCR section number:
    - Categorical Exemption. List CCR section number:
    - Common Sense Exemption. 14 CCR 15061 (b) (3)

Explain reason why Agreement is exempt under the above section:

b) Agreement **IS NOT** exempt. (consult with the legal office to determine next steps)

Check all that apply

- Initial Study
- Negative Declaration
- Mitigated Negative Declaration
- Environmental Impact Report
- Statement of Overriding Considerations

# H) List all subcontractors (major and minor) and equipment vendors: (attach additional sheets as necessary)

Legal Company Name:	Budget
DOE- Pacific Northwest National Laboratory	\$ 1,051,777
Barr Engineering	\$ 1,031,835
California State University, San Diego	\$ 179,888
TBD - Contractor	\$ 230,000
	\$

# I) List all key partners: (attach additional sheets as necessary)

, , ,	
Legal Company Name:	

# J) Budget Information

Funding Source	Funding Year of Appropriation	Budget List Number	Amount
EPIC	18-19	301.001F	2,999,599

R&D Program Area: EGRO: Renewables

TOTAL: \$2,999,599



Reimbursement Contract #: Federal Agreement #:

# K) Recipient's Contact Information

# 1. Recipient's Administrator/Officer

Name: Jason Czapla Address: 447 W Aten Rd Ste G

City, State, Zip: Imperial, CA 92251-9713 Phone: 442-202-9605 E-Mail: jason.czapla@cthermal.com CALIFORNIA ENERGY COMMISSION

# 2. Recipient's Project Manager

Name: Jason Czapla Address: 447 W Aten Rd Ste G

City, State, Zip: Imperial, CA 92251-9713 Phone: 442-202-9605 E-Mail: jason.czapla@cthermal.com

# L) Selection Process Used

- Competitive Solicitation Solicitation #: GFO-19-303
- First Come First Served Solicitation #:

# M) The following items should be attached to this GRF

- 1. Exhibit A, Scope of Work
- 2. Exhibit B, Budget Detail
- 3. CEC 105, Questionnaire for Identifying Conflicts
- 4. Recipient Resolution
- 5. CEQA Documentation
- ⊠ N/A □ N/A

- Attached
- Attached
- Attached
- Attached
- Attached

**Agreement Manager** 

Date

**Office Manager** 

Date

**Deputy Director** 

Date

# I. TASK ACRONYM/TERM LISTS

#### A. Task List

Task #	CPR <sup>1</sup>	Task Name
1		General Project Tasks
2		Design GMEPS Technology for Silica Removal From Geothermal Brines
3		Laboratory Demonstration of GMEPS Silica Removal
4		Develop Initial Engineering Designs
5		Optimize and Scale-Up GMEPS For Silica Removal from Salton Sea Brines
6		Prepare For Field Test And Evaluation
7	Х	Finalize GMEPS Pilot Engineering Design
8		Manufacture And Commission GMEPS Pilot Plant
9		Field Test and Evaluation of GMEPS At Demonstration Site
10		Techno-Economic Analysis and Engineering Report
11		Evaluation of Project Benefits
12		Technology/Knowledge Transfer Activities
13		Production Readiness Plan

# B. Acronym/Term List

Acronym/Term	Meaning
Barr	Barr Engineering
CAM	Commission Agreement Manager
CAO	Commission Agreement Officer
CAPEX	Capital Expenditures
CPR	Critical Project Review
CRC	Crystallizer-Reactor-Clarifier (Geothermal process)
GMEPS	Geothermal Micro-pillar Enabled Separator
GPM	Gallons per Minute
HKG	Hell's Kitchen Geothermal
OPEX	Operational Expenditures
pH Mod	pH Modification (Geothermal process)
PNNL	Pacific Northwest National Labs
SDSU	San Diego State University

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

# A. Purpose of Agreement

<sup>&</sup>lt;sup>1</sup> 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.

The purpose of this Agreement is to design, build, and demonstrate a novel silica removal technology to manage silica in geothermal brine.

## **B.** Problem/ Solution Statement

#### Problem 199

Silica management in geothermal brines is a common issue for many operations. As the geothermal fluids are cooled through the power conversion process, silica begins to precipitate out of solution, causing scale deposition on equipment and leading to failures. This causes performance degradation and results in increased operating and maintenance costs.

The methods used today to manage silica are either a controlled precipitation process called Crystallizer-Reactor-Clarifier (CRC) or pH Modification. These methods are capital and operating cost intensive and restrict flexible power generation.

## Solution

New technology Geothermal Micropillar Enabled Particle Separator (GMEPS) separates solid particles based on their size as they flow through a series of carefully positioned staggered/offset posts. The particles bouncing off the ordered array of posts are systematically moved to one side of the separator. As a result, the bulk of the flow is cleared of particles and a concentrated slurry containing the particles is separated from the stream. The slurry of particles can then be processed with standard methods for removal. There is no need for addition of corrosion inhibitors or flocculants, and the separation system does not require cycling (as for filters) or the allowance for large settling volumes (as for traditional settling-type clarifiers). Instead, the separation is accomplished dynamically under a wide range of flow conditions. Larger particles separate faster than smaller particles, enabling size separation and purification for value added by-products. Novel designs and manufacturing methods allow these GMEPS separators to be made cost effectively, at industrial scale, and in a form-factor that allows deployment within existing geothermal piping.

# C. Goals and Objectives of the Agreement

# Agreement Goals

The goals of this Agreement are to:

- Demonstrate silica removal from flowing geothermal brine at laboratory and pilot scales.
- Gather scaling factors to assist in design of larger scale demonstration/commercial plants.
- Provide techno-economic analysis for commercial scale operations and quantify the potential benefits of:
  - Reducing geothermal energy costs
  - Enabling more flexible geothermal power generation
  - Facilitating improved minerals extraction from geothermal brines

<u>Ratepayer Benefits</u>:<sup>2</sup> This Agreement will result in the ratepayer benefits of reduced geothermal energy costs, greater geothermal flexibility, and improved mineral extraction from geothermal brines.

Initial estimates from Pacific Northwest National Labs (PNNL) show that GMEPS can reduce the capital expenditures (CAPEX) and operational expenditures (OPEX) associated with geothermal silica management by 30% and 90% respectively. The recipient completed a detailed financial model for geothermal power plant. Using this financial model and reducing overall capital costs by 5% (which is 30% reduction in silica management CAPEX) and operating costs by 14% (which is 90% reduction in silica management operating cost) a reduction in 6% of the electricity sales price to rate payers is achievable while maintaining the same project returns.

Decreasing the cost of geothermal energy will allow investor owned utilities to procure greater amounts of geothermal energy and still provide cost effective solutions to rate payers. This will allow the investor owned utilities to procure more inertia-based power that provides grid benefits and capacity.

<u>Technological Advancement and Breakthroughs</u>:<sup>3</sup> 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:

- Improving the cost and flexibility of geothermal power by significantly advancing silica management technology in geothermal operations.
- Enabling flexible operations by providing an effective silica removal system across a dynamic and wide flow regime.
- Providing a pathway to producing value-added products from the silica and other minerals removed from the brine.
- Reducing the capital and operating cost requirements of geothermal plants by reducing the footprint of silica management.

# Agreement Objectives

The objectives of this Agreement are to:

- Develop and demonstrate the efficacy of GMEPS technology for removal of silica from geothermal brines at laboratory scale.
- Demonstrate that GMEPS facilitates production of value-added minerals from geothermal brine (high quality silica, iron particles of controlled size, clean brine flow conducive to other mineral recovery steps (i.e. lithium)).
- Demonstrate scale up of the GMEPS design to pilot scale for field demonstration up to 10 gallons per minute (GPM).

<sup>&</sup>lt;sup>2</sup> 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, <u>CPUC rulemaking 11-10-003</u>).

<sup>&</sup>lt;sup>3</sup> 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.

- Produce engineering designs for optimal GMEPS utilization and scaling of technology for commercial scale operation.
- Demonstrate scalable and cost-effective manufacturing methods for GMEPS technology.
- Demonstrate flexible flow operations over a 10x range while maintaining effective silica particle separation.
- Acquire parametric test data to define the range and effectiveness of GMEPS operating on in-field flowing geothermal brine.
- Demonstrate steady-state, uninterrupted operation for at least 300 hours.
- Complete techno-economic analysis demonstrating relative economic advantages of GMEPs over existing silica removal systems.
- Calculate reduced geothermal energy costs and impacts to ratepayers.

# 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.
- 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).
- 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 <u>administrative portion</u> of the meeting will include discussion of the following:

- o 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 <u>technical portion</u> 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);
- o 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.
- 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 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.
- 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:**

• 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:
  - o 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.
- o 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 <u>no match funds</u> 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) 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.

#### The Recipient shall:

- Prepare a *Permit Status Letter* that documents the permits required to conduct this Agreement. If <u>no permits</u> 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 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.

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 insure a long-term perspective on decision-making and progress toward the project's strategic goals.

#### **Products:**

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

#### IV. TECHNICAL TASKS

# TASK 2: DESIGN GMEPS TECHNOLOGY FOR SILICA REMOVAL FROM GEOTHERMAL BRINES

The goal of this task is to design GMEPS technology for use in geothermal plants, specifically for silica removal from Salton Sea geothermal brines.

#### The Recipient shall:

- Evaluate silica and other minerals' particle size as a function of location and operating conditions in geothermal plants, with a focus on CRC plants in the Salton Sea area. Particle size and growth kinetics are key parameters for enabling new high-performance separation technology.
- Develop initial GMEPS design embodiment(s) for this application that can operate at appropriate flows, solid concentrations, and particle sizes for relevant systems.
- Prepare Initial GMEPS Design Report that includes:

- Design parameters and requirements
- Design options being considered

#### **Products:**

• Initial GMEPS Design Report

## TASK 3: LABORATORY DEMONSTRATION OF GMEPS SILICA REMOVAL

The goal of this task is to build, evaluate and demonstrate GMEPS technology for removal of silica from Salton Sea brines and explore various device configurations in controlled laboratory settings

## The Recipient shall:

- Manufacture a GMEPS device based on the design from Task 2.
- Evaluate methods to manufacture device cost-effectively. Of particular interest are new 3D printing technologies that should provide significant cost saving, easy customization, rapid prototyping, and simple scale up.
- Test GMEPS device in laboratory environment to determine key process variables and optimize performance.
- Investigate ability of GMEPS to remove dissolved silica and amorphous silica.
- Redesign, fabricate, test, and evaluate as needed.
- Demonstrate preferred GMEPS devices with Salton Sea Brines at 1 GPM.
- Prepare a *GMEPS Laboratory Demonstration Report* that includes results of laboratory testing.

# Products:

• GMEPS Laboratory Demonstration Report

# TASK 4:DEVELOPING INITIAL ENGINEERING DESIGNS

The goal of this task is to develop engineering designs of GMEPS system for silica removal from geothermal plants, with focus on Salton Sea CRC systems.

#### The Recipient shall:

- Create initial GMEPS Engineering System Designs for integration into geothermal plant;
  - Develop design basis document (to be updated periodically)
  - Develop initial flowsheet and mass and energy balance for system integration into geothermal plant, including ancillary equipment to support operation of GMEPS system. Determine most valuable GMEPS configurations with geothermal plants.
  - Develop engineering cost estimate templates to be populated as GMEPS system parameters are developed
- Prepare GMEPS Engineering System Design Report that includes:
  - Key design parameters, variables, and options
  - Summary of design calculations
  - Most valuable GMEPS configurations

#### Products:

• GMEPS Engineering System Design Report

## TASK 5: OPTIMIZE AND SCALE-UP GMEPS FOR SILICA REMOVAL FROM SALTON SEA BRINES

The goal of this task is to optimize GMEPS technology, scale up flow rates and demonstrate improved efficacy in the laboratory. The effort will provide vital data for engineering analysis and design as well as preparing for field testing of the technology.

# The Recipient shall:

- Update GMEPS design based on results from tasks above.
- Build and test a scaled-up GMEPS prototype in the laboratory to determine key variables and optimize performance.
- Evaluate device resistance to corrosion, fouling, backpressure, abrasion, etc.
- Evaluate methodologies for separating silica and iron particulates separately from brines.
- Evaluate method to produce silica particles of controlled sizes (improve product values).
- Evaluate manufacturing options to reduce cost and increase flexibility and enable scalable manufacturing.
- Build and Test Scaled-Up GMEPs Prototype up to 10 GPM and functional over a 10x change in flow rate at PNNL facilities.
- Prepare GMEPS Optimization and Scale-Up Report that includes:
  - o Summary of steps taken to optimize and scale up design
  - Challenges encountered
  - Design improvements made

#### Products:

• GMEPS Optimization and Scale-Up Report

# TASK 6: PREPARE FOR FIELD TEST AND EVALUATION

The goal of this task is to prepare for field testing and 10 GPM demonstrations of GMEPS at the Salton Sea.

#### The Recipient shall:

- Prepare Pilot Demonstration Site (permitting evaluation, site civil works, utility provisions, coordination with other site activities).
- Prepare for well "kickoff" activities if necessary (depending on site activity and pilot plant timing).
- Provide Notification of Demonstration Site Readiness

#### Products:

• Notification of Demonstration Site Readiness

# TASK 7: FINALIZE GMEPS PILOT ENGINEERING DESIGN

The goal of this task is to develop engineering, procurement and construction plans for a GMEPS field pilot.

#### The Recipient shall:

• Update engineering design basis document.

- Develop flowsheet for system integration into geothermal plant, including ancillary equipment to support operation of GMEPS system.
- Design pilot plant test system to be deployed at Salton Sea Geothermal Field based upon experimental data.
- Develop equipment specification and equipment list for GMEPS pilot.
- Develop Procurement and Construction Plan for GMEPS pilot.
- Prepare CPR Report #1 and participate in a CPR meeting, per subtask 1.3.

## **Products:**

- Procurement and Construction Plan
- CPR Report #1

# TASK 8: MANUFACTURE AND COMMISSION GMEPS PILOT PLANT

The goal of this task is to manufacture a GMEPS pilot plant for field operations.

## The Recipient shall:

- Procure GMEPS pilot equipment.
- Manufacture GMEPS pilot plant.
- Develop a test plan, safety plan, staffing plan, training plan, waste management plan, and sampling plan for pilot demonstration.
- Commission GMEPS field pilot at PNNL test facility before deploying to field.
  - Verify it is operational across the flow rate range, temperature and pressure range, and provides desired separation of particles.
- Support transportation, installation and operation of GMEPS systems to demonstration site.
- Install GMEPS pilot at field demonstration site.
- Commission GMEPS Pilot Plant on flowing geothermal brine.
- Provide Notification of Commissioning Completion

# Products:

• Notification of Commissioning Completion

# TASK 9: FIELD TEST AND EVALUATION OF GMEPS AT DEMONSTRATION SITE

The goal of this task is to operate GMEPS pilot plant on flowing geothermal brine at the demonstration site and evaluate performance.

# The Recipient shall:

- Operate GMEPS pilot plant with flowing geothermal brine over a range of conditions (up to 10 GPM) as outlined in the test plan.
- Demonstrate steady-state, uninterrupted operation for at least 300 hours.
- Gather and evaluate pilot operational data inclusive of:
  - o Pressure, temperature, flow rate
  - Particle production rates
  - o Particle size
  - Particle composition

- Relationship between operating conditions and produced particle rates, characteristics and composition.
- Create Post-Operations Report detailing the aforementioned activities.

#### **Products:**

• Post-Operations Report

## TASK 10: TECHNO-ECONOMIC ANALYSIS AND ENGINEERING REPORT

The goal of this task is to create the final techno-economic analysis and Engineering Report.

#### The Recipient shall:

- Create Final Engineering Report that includes:
  - Process design criteria for preferred GMEPS prototype
  - GMEPS prototype designs and specifications
  - Record of test work and data
  - Evaluation of test work and GMEPS performance
  - Preferred manufacturing methods
  - Scale up designs for 1,000 and 10,000 GPM systems
  - Commercialization plan
  - Process flow for preferred configuration(s)
  - Process design criteria
- Write Techno-Economic Analysis Report that includes:

• Summary and evaluation of acquired GMEPS operating data (both lab and pilot scale) upon which the techno-economic analysis is based.

• CAPEX and OPEX estimates for commercial scale plant and comparison to current methods of silica management (CRC and pH Mod).

• Evaluation of potential product streams (silica particles with specific size range, Fe particles, others salts etc.) in terms of material characteristics, separation potential and market value.

• Evaluation of market for separated bulk particulate products (pure silica, pure iron oxide, etc.)

• Comparison of performance of GMEPS technology to existing silica removal technology and determine impact to plant flexibility and downstream mineral recovery.

#### Products:

- Final Engineering Report
- Techno-Economic Analysis Report

# TASK 11: 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 data, title, and pariodical name
  - Published documents, including date, title, and periodical name.
    Estimated or actual energy and cost savings and estimated state
  - 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.
  - 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 12: TECHNOLOGY/KNOWLEDGE TRASFER 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.
  - 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 Commissionsponsored conference/workshop(s) on the project.
- When directed by the CAM, participate in annual EPIC symposium(s) sponsored by the California Energy Commission.
- 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.
- 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
- Technology/Knowledge Transfer Plan (draft and final)
- Technology/Knowledge Transfer Report (draft and final)

# TASK 13: PRODUCTION READINESS PLAN

The goal of this task is to determine the steps that will lead to the manufacturing of technologies developed in this project or to the commercialization of the project's results.

#### The Recipient shall:

- Prepare a *Production Readiness Plan.* The degree of detail in the plan should be proportional to the complexity of producing or commercializing the proposed product, and to its state of development. As appropriate, the plan will discuss the following:
  - Critical production processes, equipment, facilities, personnel resources, and support systems needed to produce a commercially viable product.
  - Internal manufacturing facilities, supplier technologies, capacity constraints imposed by the design under consideration, design-critical elements, and the use of hazardous or non-recyclable materials. The product manufacturing effort may include "proof of production processes."
  - The estimated cost of production.
  - The expected investment threshold needed to launch the commercial product.
  - An implementation plan to ramp up to full production.
  - The outcome of product development efforts, such as copyrights and license agreements.
  - Patent numbers and applications, along with dates and brief descriptions.
  - Other areas as determined by the CAM.

#### **Products:**

• Production Readiness Plan (draft and final)

# V. PROJECT SCHEDULE

Please see the attached Excel spreadsheet.

# Memorandum

To: David Hochschild Janea A. Scott Karen Douglas Andrew McAllister Patty Monahan Date: May 29, 2020

- From: Chuck Gentry Mechanical Engineer, Energy Research and Development Division
- Subject: California Environmental Quality Act Analysis for EPC-19-029, Hell's Kitchen Geothermal, LLC's Improved Silica Removal for Enhanced Geothermal Plant Performance Project

I am a Mechanical Engineer in the Research and Development Division, California Energy Commission ("CEC"), and the CEC's Agreement Manager for proposed Agreement EPC-19-029 (GFO-19-303-10) ("Agreement").

This memo analyzes the environmental impacts of the proposed grant Agreement, which is part of a separate, but overlapping Project considered and approved by the lead agency, the Imperial County Planning Commission ("County"). The County evaluated Conditional Use Permit Application No. 16-0001, for the Hell's Kitchen Exploratory Wells Project ("Project") which is described in the County's California Environmental Quality Act ("CEQA") documentation as a project to construct, operate, and test geothermal exploration wells, and to implement a resource appraisal program to support the potential future development of geothermal resources on land currently owned by the Imperial Irrigation District in the unincorporated area of Imperial County. The approximately 1881.72 acre geothermal leasing area boarders the Salton Sea, and is within the area known as the Salton Sea Known Geothermal Resource Area. The project involves four well pads, three move on areas, and up to six exploratory wells. The estimated area of disturbance for the Project is approximately 28.24 acres.

Pursuant to my work on the Agreement, including the scope of work for the Agreement, I have reviewed the County's CEQA documents relevant to the Agreement. These CEQA documents include: (1) the Final Programmatic Environmental Impact Report ("FEIR") for the County's Renewable Energy and Transmission Element ("RETE"); (2) the Findings and Statement of Overriding Consideration for the FEIR; (3) Board of Supervisors Resolution No. 2015-150 approving and certifying the FEIR, and adopting findings, the mitigation, monitoring, and reporting program measures, and adopting the Statement of Overriding Considerations as to aesthetics; (4) the County Board of Supervisors Resolution No. 2015-151 approving the RETE as an amendment to the general plan; (5) the Notice of Determination for the FEIR; (6) an Addendum to the FEIR in the form of a project level Initial Study/Environmental Analysis for the Hell's Kitchen Exploratory Wells Project ("Addendum"); (7) the County Planning Commission's Resolution No. 2017-0037, certifying the Addendum for the Project to the previously-approved FEIR; for the RETE (8) the County Planning Commission's Resolution No. 2017-0038, approving the geothermal Conditional Use Permit ("CUP") #16-0001.

In the County's FEIR for the RETE, it identified Aesthetics as the one area in which RETE would create significant, but unavoidable, environmental impacts. In this area, the County concluded that specific economic, legal, social, technological, or other considerations make infeasible the mitigation measures or Project alternatives identified in the FEIR.

In the County's Addendum for the Project, it determined that the Project would result in no new, increased, or substantially different impacts, other than those previously considered and addressed in the FEIR for the RETE. The County determined that no changes or additions to the FEIR analysis were necessary, nor was there a need for new or additional mitigation measures.

Based on my review and consideration of the above documents, it is my independent and professional opinion that, since the above CEQA documents have been finalized, there have been no new Project changes, and no new, additional, or increased significant environmental impacts have occurred. Furthermore, I have not identified any new information which would change the conclusions of the County's CEQA documents, or render those conclusions inadequate.

It is also my independent and professional opinion that the work to be performed under the proposed Agreement falls within the scope of the County's CEQA documents, and that the Agreement will not result in any new significant environmental impacts beyond those already considered. Finally, I have not identified any new mitigation measures, within the CEC's authority, that would lessen or further mitigate the impacts of the Project, or of the implementation of the RETE.

The reasons for my conclusions are as follows:

The proposed agreement includes demonstrating a new technology called Geothermal Micropillar Enabled Particle Separator ("GMEPS"), which separates solid particles based on their size as they flow through a series of carefully positioned staggered/offset posts within a pipe. The particles bouncing off the ordered array of posts are systematically moved to one side of the separator. As a result, the bulk of the flow is cleared of particles and a concentrated slurry containing the particles is separated from the stream. The slurry of particles can then be processed with standard methods for removal. The prototype will be demonstrated at the site using brine from wells developed through Hell's Kitchen Exploratory Wells Project under geothermal CUP #16-0001. Brine will be provided from a flowing production well, flashed to atmospheric pressure in a separator package, a slip stream (about 10 gallons per minute) will be provided to the prototype, and remaining brine will be pumped to an injection well.

All of the construction, operation and other activities described in the scope of work of the proposed Agreement fall within the activities evaluated by the County's CEQA documents identified above. The scope of work of the proposed Agreement has no conflicts of information with the County's 2015 FEIR or the 2017 Addendum to the 2015 FEIR.

# Aesthetics

The proposed Agreement will not have any impact on aesthetics, and will not change the impacts identified in the County's CEQA documents.

The County's Statement of Overriding Considerations for the RETE FEIR identifies several unmitigable items under the aesthetics category, including:

1. Damage scenic resources.

- 2. Degrade existing visual character.
- 3. Glare and glint.

The proposed Agreement will not implicate any of the findings as identified in the statement of overriding considerations.

# **Agricultural Resources**

The proposed Agreement will not have any impact on agricultural resources, and will not change the impacts identified in the County's CEQA documents.

# **Air Quality**

The proposed Agreement will not have any impact on air quality, and will not change the impacts identified in the County's CEQA documents.

# **Biological Resources**

The proposed Agreement will not have any impact on biological resources, and will not change the impacts identified in the County's CEQA documents.

# **Cultural Resources**

The proposed Agreement will not have any impact on cultural resources, and will not change the impacts identified in the County's CEQA documents.

# Geology and Soils

The proposed Agreement will not have any impact on geology and soils, and will not change the impacts identified in the County's CEQA documents.

# **Greenhouse Gas Emissions**

The proposed Agreement will not have any impact on greenhouse gas emissions, and will not change the impacts identified in the County's CEQA documents.

# Hazards and Hazardous Materials

The proposed Agreement will not have any impact on hazards and hazardous materials, and will not change the impacts identified in the County's CEQA documents.

# Hydrology and Water Quality

The proposed Agreement will not have any impact on hydrology and water quality, and will not change the impacts identified in the County's CEQA documents.

# Land Use and Planning

The proposed Agreement will not have any impact on land use and planning, and will not change the impacts identified in the County's CEQA documents.

# **Mineral Resources**

The proposed Agreement will not have any impact on mineral resources, and will not change the impacts identified in the County's CEQA documents.

# Noise and Vibration

The proposed Agreement will not have any impact on noise and vibration, and will not change the impacts identified in the County's CEQA documents.

# **Population and Housing**

The proposed Agreement will not have any impact on population and housing, and will not change the impacts identified in the County's CEQA documents.

# **Public Services**

The proposed Agreement will not have any impact on public services, and will not change the impacts identified in the County's CEQA documents.

# Recreation

The proposed Agreement will not have any impact on recreation, and will not change the impacts identified in the County's CEQA documents.

# Transportation/Traffic

The proposed Agreement will not have any impact on transportation/traffic, and will not change the impacts identified in the County's CEQA documents.

# **Utilities and Service Systems**

The proposed Agreement will not have any impact on utilities and service systems, and will not change the impacts identified in the County's CEQA documents.

California Energy Commission

June 10, 2020 Business Meeting – Agenda Item #12a

HELL'S KITCHEN GEOTHERMAL LLC. Project: "Improved Silica Removal for Enhanced Geothermal Plant Performance" (EPC-19-29). The full California Environmental Quality Act (CEQA) supporting documentation for EPC-19-29 can be obtained at:

DRAFT ENVIRONMENTAL IMPACT REPORT. STATE CLEARINGHOUSE NO. 2014071062 available at:

http://icpds.com/CMS/Media/Renewable-Energy-and-Transmission-Element-2015.pdf

Final EIR, Findings and Statement of Overriding Consideration: <u>www.icpds.com/CMS/Media/Findings-of-Fact\_Imperial-County-Renewable-7-2-15.pdf</u>

Board of Supervisors Resolution No. 2015-150: attached

Board of Supervisors Resolution No. 2015-151: attached

Notice of Determination for the RETE FEIR available at: <u>www.icpds.com/CMS/Media/CEC-Recorded-NOD.pdf</u>

Addendum/Initial study and CUP available at: <u>www.icpds.com/CMS/Media/IS-16-0010-Hells-Kitchen-Exploratory-Well.pdf</u>

Planning Commission Resolution No. 2017-0037: attached

Planning Commission Resolution No. 2017-0038: attached

A RESOLUTION OF THE BOARD OF SUPERVISORS OF THE COUNTY OF IMPERIAL, CALIFORNIA, FOR THE APPROVAL AND CERTIFICATION OF THE FINAL PROGRAMMATIC ENVIRONMENTAL IMPACT REPORT FOR THE "RENEWABLE ENERGY & TRANSMISSION ELEMENT (RETE)", ADOPTION OF FINDINGS; ADOPTION OF ALL MITIGATION, MONITORING AND REPORTING PROGRAM MEASURES; and ADOPTION OF A STATEMENT OF OVERRIDING CONSIDERATIONS AS TO AESTHETICS

## **RESOLUTION NO. 2015-150**

WHEREAS, a Final Programmatic Environmental Impact Report (PEIR) has been prepared for the update to the 2006 Geothermal/Alternative Energy & Transmission Element, retitled the "Renewable Energy & Transmission Element" and associated consistency updates to other Elements as well as updated conforming zoning provisions in the Land Use Ordinance, Title 9, Divisions 2, 5, 14, 17 and 25 (collectively the "Final PEIR") has been prepared in accordance with the requirements of the California Environmental Quality Act, General Plan Guidelines and local regulations; and,

WHEREAS, the Board of Supervisors of the County of Imperial has the responsibility regarding the independent review of the Final PEIR for the RETE for approval and certification; and,

WHEREAS, the Final PEIR for the RETE has been provided in a timely manner to public agencies and respondents to the document; and,

WHEREAS, timely public notice of the Board of Supervisor's hearing on the Project has been given, and the Board of Supervisors has considered evidence presented by the Imperial County Planning & Development Services Department and other interested parties at that public hearing held with respect to this item on October 6, 2015; and,

NOW THEREFORE, the Board of Supervisors of the County of Imperial DOES HEREBY RESOLVE as follows:

**SECTION 1.** The Recitals set out above are true and correct.

**SECTION 2.** The Board of Supervisors has reviewed and considered the proposed Final PEIR and the Record of Proceedings prior to making a decision to adopt the proposed Final PEIR and that the Final PEIR represents the independent judgment of the County.

**SECTION 3.** That the Final PEIR has been prepared in accordance with the requirements of the California Environmental Quality Act and its Guidelines.

1

**SECTION 4.** <u>Findings</u>: That the Board finds that except for aesthetic impacts, all significant impacts of the project can and have been mitigated as set out in those Section of the Final PEIR attached and incorporated as Exhibit A, that as set out there, , changes or alternations have been required in or incorporated into the project that avoid or substantially lessen those significant environmental impacts; that the Final PEIR identifies where those changes or alternations are within the responsibility and jurisdiction of another public agency which has, can or should adopt them; and that substantial evidence as set out in the Final PEIR supports such findings based upon information provided to the County by experts, including but not limited to the County's consultant and County staff, on whom the County relies.

**SECTION 5.** <u>Statement of Overriding Considerations</u>: As set out in and supported by Section 11 of the Final PEIR, the Board of Supervisors adopts and makes this statement of overriding considerations concerning the project's unavoidable significant impacts on aesthetics to explain why the project's benefits override and outweigh its unavoidable impacts. The Board of Supervisors finds that the project's significant environmental impacts are acceptable as to aesthetics in light of the project's benefits. Each benefit constitutes an overriding consideration warranting approval of the project, independent of the other benefits, despite each and every unavoidable impact; that the specific economic, social, technical and other considerations are identified in Section 11 of the Final PEIR, specifically the need to create new jobs, and that the Board has determined such expected benefits from the project outweigh the policy of reducing or avoiding significant environmental impacts.

**SECTION 6.** <u>Mitigation, Monitoring and Report Program</u>. The Board of Supervisors further finds that the Mitigation Monitoring and Reporting Program for this Final PEIR as set out in Chapter 5.0 of the Final PEIR shall be incorporated into future projects to ensure that during project implementation, future solar developers and any other responsible parties implement and comply with consistent mitigation measures as identified in the a Final PEIR, which measures are made enforceable through conditions of approval and/or agreements for such projects. Adoption of the mitigation measures here will avoid or substantially lessen all of the project's potentially significant impacts, as set out in the PEIR, except as to aesthetics.</u>

**SECTION 7.** <u>Project Alternatives</u>: The Board of Supervisors finds that no project alternative would have mitigated aesthetic impacts below a level of insignificance. The County developed three alternatives in the early planning stages of the proposed Project. After careful consideration, one alternative was eliminated because it did not offer any advantage over the two other alternatives that were carried forward. The proposed Project represents the most restrictive of all considered alternatives, while the DRECP Alternative presented the largest overlay zone map. The eliminated alternative did not reduce the amount of land available for development to the degree of the proposed Project, nor did it offer an overlay zone map that was larger than the DRECP Alternative. Furthermore, the eliminated alternative would not have reduced impacts related to aesthetics to a level less than significant, since it would also introduce renewable energy facilities that would change the visual quality of the area. Consequently, there was no distinguishing characteristic to this alternative that gave it an advantage over the proposed Project or DREP alternative, and consequently was eliminated. Therefore, the proposed Project presents a reasonable range of alternatives and is consistent with CEQA.

**SECTION 8.** <u>Additional Findings:</u> The Board of Supervisors further finds that: (a) No mitigation measures have been added, rejected or changed since circulation of the Draft PEIR although some mitigation measures have been clarified; (b) there has been no change in the analysis of the effectiveness of such mitigation measures; (c) the change in the size of the Renewable Energy Overlay Zone reduced its size and clarified parcel boundaries; (d) the removal of the Renewable Zone category did not change the analysis in the EIR and, if anything, reduced impacts; (e) the existing conditions data presented in Baseline Inventory Report and Draft PEIR that was based on information presented in the federal Draft Desert Renewable Energy Conservation Plan EIR/EIS was utilized because it presents a scientifically accurate description of existing resources present within Imperial County with data from scientific studies conducted by the Federal and State agencies who have access to the most recent information regarding biological and other resources; (f) subsequent revisions to the DRECP EIR/EIS do not change this analysis; (g) the Project will not individually or cumulative have an unmitigated adverse effect on fish and wildlife resources, as defined in Section 711.2 of the Fish and Game Code as mitigated.

SECTION 9. Custodian of Records: That the Record of Proceedings consists of the Final PEIR, updated RETE and consistency changes to associated Elements, the County staff reports; the various documents referenced therein; all final reports, applications, memoranda, maps, letters, and other planning documents prepared and/or utilized by the County's planning/environmental consultant; and other planning documents prepared and/or utilized by the County staff; all documents submitted by members of the public and public agencies in connection with the RETE and associated Elements update; minutes and transcripts of public meetings and public hearings; written and verbal public testimony presented during a noticed public hearing for the proposed Project during which such testimony was taken; and any and all other materials which constitute the record of proceeding pursuant to Public Resources Code, Section 21167.6(e); and matters of common knowledge to the County staff, consultant team and Planning Commission, including, but not limited to the County General Plan, the County Land Use Ordinance, the Imperial County Code, and County policies, which may be found at the Clerk of Board's Office located at 940 Main Street, Suite 209, El Centro, CA, 92243 during regular business hours, and the Imperial County Planning & Development Services Department at 801 Main Street, El Centro, CA 92243. This information is provided in compliance with Public Resources Code Section 21081.6 and 14 Cal. Code Reg's, Section 15091(e).

**SECTION 10. That** the Board of Supervisors of the County of Imperial **DOES HEREBY APPROVE AND CERTIFY** the Final Programmatic EIR for the proposed "*Renewable Energy* & *Transmission Element*" with associated changes to other elements and the confirming changes to the Land Use Ordinance, Title 9, Divisions 2,5,14, 17 and 25.

Ry Kelley

Ryan E. Kelley, Chairman Imperial County Board of Supervisors

I hereby certify that the preceding resolution was taken by the Board of Supervisors at a meeting conducted on October 6, 2015, by the following vote:

- AYES: Renison, Terrazas, M. Kelley, R. Kelley, Castillo
- NOES: None
- ABSENT: None
- **ABSTAIN:** None

ATTEST:

Blanca Acosta, Clerk of the Board of Supervisors

# A RESOLUTION OF THE BOARD OF SUPERVISORS OF THE COUNTY OF IMPERIAL, CALIFORNIA, APPROVING THE *RENEWABLE ENERGY* & *TRANSMISSION ELEMENT* (RETE) AS AN AMENDMENT TO THE GENERAL PLAN AND ASSOCIATED MINOR CONSISTENCY CHANGES TO OTHER ELEMENTS

#### **RESOLUTION NO. 2015-151**

WHEREAS, an update to the 2006 Geothermal/Alternative Energy & Transmission Element and associated consistency updates to other Elements (collective the "RETE") has been prepared in accordance with the requirements of the California General Plan Guidelines and local regulations; and,

WHEREAS, the Board of Supervisors of the County of Imperial has the authority to approve the RETE; and,

WHEREAS, the RETE has been provided in a timely manner to public agencies for their review; and,

WHEREAS, at a duly noticed public hearing held before the Planning Commission on July 22, 2015, as required by State law and the Imperial County Code, the Planning Commission reviewed and recommended approval of the RETE and determined it to be consistent with the General Plan as amended; and,

WHEREAS, timely public notice of the Board of Supervisors hearing on the Project has been given, and the Board of Supervisors has considered evidence presented by the Imperial County Planning & Development Services Department, its consultants, and other interested parties at that public hearing held with respect to this item on October 6, 2015; and,

NOW THEREFORE, the Board of Supervisors of the County of Imperial DOES HEREBY RESOLVE as follows:

SECTION 1. The Recitals set out above are true and correct.

**SECTION 2.** The Board of Supervisors independently has reviewed and considered the proposed RETE and associated Elements as well as the Record of Proceedings here prior to making a decision to approve the RETE and associated Elements.

**SECTION 3.** The Board of Supervisors finds and determines that the RETE should be revised as follows:

- 1. Add the word "local" before "employment opportunities" in Section I, Subsection C, Paragraph 4;
- 2. Add the words "safe and" before "adequate" in Section IV, Subsection C, Paragraph 12;

- 3. Add the words "job quality," "skilled career training," and "local hire practices" to the end of Section IV, Subsection C, Paragraph 16, Subparagraph h;
- 4. Remove the phrase, "Does not have any significant biological or agricultural resources on site," and replace with, "Would not result in any significant environmental impacts" in Section IV, Subsection D, Paragraph 1, Bullet number one, Subbullet number two;
- 5. Add the phrase, "ensuring the health and safety of workers constructing, operating and maintaining renewable energy facilities" between Bullets number two and three of Section IV, Subsection E, Paragraph 2; and
- 6. Add the word "local" before "employment" in Appendix D, Bullet number four.

**SECTION 4.** The Board of Supervisors finds and determines that the RETE is adequate and prepared in accordance with the requirements of State law, the Imperial County Code, and the California General Plan Guidelines and regulations, including but not limited to the review of water matters, consultation with Native American Tribes, and referral to local, State, and Federal agencies and organizations, including but not limited to cities in the County, applicable military bases, and the IBEW 569.

SECTION 5. This Resolution shall be effective 30 days from the date of its adoption.

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**NOW, THEREFORE**, based on the above findings, the Board of Supervisors of the County of Imperial **DOES HEREBY APPROVE** the proposed "Renewable Energy & Transmission Element".

Kelley

Ryan E. Kelley, Chairman Imperial County Board of Supervisors

I hereby certify that the preceding resolution was taken by the Board of Supervisors at a meeting conducted on October 6, 2015, by the following vote:

AYES: Renison, Terrazas, M. Kelley, R. Kelley, Castillo

NOES: None

ABSENT: None

**ABSTAIN: None** 

**ATTEST:** 

Blanca Acosta, Clerk of the Board of Supervisors

## **RESOLUTION NO. 2017 - 0037**

# A RESOLUTION OF THE PLANNING COMMISSION OF THE COUNTY OF IMPERIAL, CERTIFYING THE ADDENDUM TO THE PREVIOUSLY-APPROVED PROGRAMMATIC FINAL ENVIRONMENTAL IMPACT REPORT (FEIR), FOR THE RENEWABLE ENERGY & TRANSMISSION ELEMENT (RETE)

WHEREAS, an Addendum to the Final EIR, SCH#2014071062, for the Programmatic FEIR for the RETE and previously-approved CEQA Findings have been prepared in accordance with the requirements of the California Environmental Quality Act, the State CEQA Guidelines, and the County's "Guidelines to Implement CEQA, as Amended" for the submitted exploratory well project (the "Project");

WHEREAS, the Planning Commission of the County of Imperial has been delegated with the responsibility of reviewing the CEQA Addendum and supporting documentation for its certification and approval;

**WHEREAS**, the Addendum to the FEIR has been provided in a timely manner to public agencies;

WHEREAS, timely public notice of the Planning Commission's hearing on the Project application has been given, and the Planning Commission has considered evidence presented by the Imperial County's consultant, the Planning & Development Services Department and other interested parties at that public hearing held with respect to this item on June 14, 2017;

**WHEREAS**, the Addendum to the Final Programmatic EIR includes the previous analysis of various alternatives as required by CEQA; and,

**NOW THEREFORE,** the Planning Commission of the County of Imperial **DOES HEREBY RESOLVE** as follows:

**SECTION 1.** The Planning Commission independently has reviewed and considered the proposed Addendum to the previously-approved Programmatic Final Environmental Impact Report, Mitigation Monitoring and Reporting Program (MM&RP), and CEQA Findings prior to certifying the proposed Addendum and following Findings of Fact. The Planning Commission finds and determines that the Addendum to the FEIR is adequate and prepared in accordance with the requirements of the California Environmental Quality Act (CEQA) which analyzes environmental effects, based upon the following findings and determinations.

PLANNING COMMISSION RESOLUTION FOR Addendum to Final EIR and Findings of Fact Page 2 of 3

**SECTION 2.** That in accordance with, CEQA, State Planning and Zoning law and the County of Imperial Land Use Ordinance, the following findings for the recommendation for approval and certification of the Addendum to the FEIR, MM&RP and Findings of Fact have been made as follows:

1. That the Addendum to the Final EIR, SCH# 2014071062, has been prepared in accordance with the requirements of the California Environmental Quality Act, the State CEQA Guidelines, and the County's "Guidelines to Implement CEQA as Amended";

2. That the County independently has reviewed, analyzed, and considered the Addendum to the Final EIR, the environmental impacts therein identified for this Project, the Mitigation Monitoring and Reporting Program, and the entire Record of Proceedings prior to recommending approval of this project.

3. That the Addendum to the Final EIR and the CEQA Findings reflect the independent judgment of the County.

4. That the CEQA Findings are supported by substantial evidence and backed by information provided to the County by experts, including but not limited to the County staff and the Addendum preparer, on whom the County relies.

5. That the County accept as its own, incorporate as if set forth in full herein, and make each and every one of the findings contained in the attached CEQA Findings, including feasibility of mitigation measures pursuant to Public Resources Code, Section 21081(a)/CEQA Guidelines 15091.

6. That the attached Mitigation Monitoring and Reporting Program is designed to ensure that during project implementation, the Developer and any other responsible parties implement the Project components and comply with feasible mitigation measures identified in the CEQA Findings, the Project entitlements, and the Mitigation Monitoring and Reporting Program and that these measures are fully enforceable through permit conditions, agreements, and/or other measures.

7. That the Project will not individually or cumulative have an unmitigated adverse effect on fish and wildlife resources, as defined in Section 711.2 of the Fish and Game Code.

8. That the Record of Proceedings consists of the Addendum to the Final EIR (and all its technical reports and addendums thereto); the County staff reports; the CEQA Findings; the Mitigation Monitoring and Reporting Program; the various Project entitlements and documents referenced therein; all final reports, applications, memoranda, maps, letters, and other planning documents prepared and/or utilized by the EIR planning/environmental consultant; all final reports, memoranda, maps, letters, and other planning documents prepared and/or utilized by the County staff; all documents submitted by members of the public and public agencies in connection with the Addendum to the PLANNING COMMISSION RESOLUTION FOR Addendum to Final EIR and Findings of Fact Page 3 of 3

Final EIR; minutes and transcripts of all public meetings and public hearings; all written and verbal public testimony presented during a noticed public hearing for the proposed Project which such testimony was taken and any and all other materials which constitute the record of proceeding pursuant to Public Resources Code, Section 21167.6(e); and matters of common knowledge to the County staff and Planning Commission, including, but not limited to the County General Plan, the County Land Use Ordinance, and County policies, which may be found at the Clerk's Office, during regular business hours at the Imperial County Planning & Development Services Department, 801 Main Street, El Centro, CA 92243.

9. That the County Planning Commission does hereby certify the Addendum to the Final EIR for purposes of approving the exploratory well project as submitted;

**NOW, THEREFORE**, based on the above findings, the Planning Commission of the County of Imperial **DOES HEREBY CERTIFY** the proposed Addendum to the Final EIR for the exploratory well project.

Rudy Schiffne

Rudy Schaffner, Chairperson Imperial County Planning Commission

I hereby certify that the preceding Resolution was approved by the Planning Commission at a meeting conducted on June 14, 2017, by the following vote:

AYES:

NOES:

**ABSENT:** 

**ABSTAIN:** 

ATTEST:

Ma - L

Jim Minnick, Director of Planning and Development Services Secretary to the Planning Commission

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#### **RESOLUTION NO. 2017-0038**

# A RESOLUTION OF THE PLANNING COMMISSION OF THE COUNTY OF IMPERIAL, CALIFORNIA, TO APPROVE THE GEOTHERMAL PERMIT #16-0001" FOR THE EXPLORATORY WELL PROJECT.

WHEREAS, Controlled Thermal Resources dba Hell's Kitchen Geothermal LLC has submitted an application for a Geothermal Permit #16-0001 for an exploratory well project;

WHEREAS, an Environmental Impact Report and CEQA Findings has been previously prepared in accordance with the requirements of the California Environmental Quality Act, the State Guidelines, and the County's "Guidelines to Implement CEQA as Amended";

WHEREAS, the Planning Commission of the County of Imperial has been delegated with the responsibility of reviewing the Geothermal Permit and supporting documents for its approval;

WHEREAS, public notice of said application has been given, and the Planning Commission has considered evidence presented by the Imperial County Planning & Development Services Department and other interested parties at a public hearing held with respect to this item on June 14, 2017; and

WHEREAS, previously on May 2, 2017, the Draft Programmatic EIR for the Renewable Energy & Transmission Element (FEIR) was submitted to the State Clearinghouse and circulated for 50 days and on (month) date, 2015, the Notice of Completion and EIR was received by the State Clearinghouse (SCH#2014071062).

**NOW, THEREFORE**, the Planning Commission of the County of Imperial **DOES HEREBY RESOLVE** and approves the Geothermal Permit #16-0001 as follows:

**SECTION 1.** The Planning Commission has considered the proposed Geothermal Permit #16-0001 prior to recommending approval. The Planning Commission finds and determines that the Geothermal Permit is adequate and prepared in accordance with the requirements of the Imperial County General Plan, Land Use Ordinance, and the California Environmental Quality Act (CEQA) which analyzes environmental effects, based upon the following findings and determinations.

**SECTION 2.** That in accordance with State Planning and Zoning law and the County of Imperial regulations, the following findings for the recommending approval of Geothermal Permit #16-0001 have been made as follows:

A. The proposed use is consistent with goals and policies of the adopted County General Plan.

The General Plan designates the subject site as "Recreation/Open Space" An analysis of the project's consistency with the General Plan goals and objectives relevant to the project is provided within the Addendum to the Renewable Energy & Transmission Element's Programmatic FEIR and considered consistent with the applicable policies of the FEIR. A detailed analysis of the project's consistency with the General Plan goals, objectives, and policies regarding renewable energy, e.g. geothermal exploration/development is provided for in the Addendum to the FEIR.

B. The proposed use is consistent with the purpose of the zone or sub-zone within which the use will be used.

The Project could be found consistent with the proposed use of the zones it is located within. The purpose of the project is for the construction of up to four (4) well pads and up to six (6) major exploratory wells. With a geothermal permit, projects for "Oil, gas & geothermal exploration" are uses that are permitted in the S-1 (Open Space/Recreation) Zone with approval by the County.

C. The proposed use is listed as a use within the zone or sub-zone or is found to be similar to a listed permit according to the procedures of Section 90518.00 and Section 91703.00, et. seq.

The proposed geothermal exploratory project is consistent with the definition of Land Use Ordinance, Section 90518.00 and Definitions, Section 91401.06 "G" with an approved Conditional Use Permit.

D. The proposed use meets the minimum requirements of this Title applicable to the use and complies with all applicable laws, ordinances and regulation of the County of Imperial and the State of California.

The Conditions of Approval will ensure that the project complies with all applicable regulations of the County of Imperial and the State of California.

Therefore, the proposed project will meet the minimum requirements of the Land Use Ordinance, Section 90518.00 and Section 91703.00, et. seq.

E. The proposed use will not be detrimental to the health, safety, and welfare of the public or to the property and residents in the vicinity.

The geothermal exploratory well project is not in near proximity to large residential areas and is generally surrounded by agricultural uses to the East and geothermal plants to the South and Southeast of the project site. The project would not present a hazard to the Airport Operations Area (or overflight zone) for the Calipatria Municipal Airport to the South. Based on these considerations and the fact that the project is an allowable use within the applicable open space zoning, the exploratory project would result in **less than significant** land use conflicts with adjacent uses.

- F. The proposed use does not violate any other law or ordinance. The proposed project is conditioned to be consistent with Imperial County, Title 9, Land Use Ordinance and CEQA mitigation measures. The proposed project will be subject to the Geothermal Permit and current Federal, State, and Local regulations.
- G. The proposed use is not granting a special privilege. The geothermal exploratory well project is a permitted use subject to approval of a Conditional Use Permit (Land Use Ordinance, Section 90518.00) et. seq. and will not grant a special privilege.

**NOW, THEREFORE,** based on the above findings, the Imperial County Planning Commission **DOES HEREBY RECOMMEND APPROVE** Geothermal Permit #16-0001, subject to the attached Conditions of Approval.

Rudy Schaffere

Rudy Schaffner, Chairperson Imperial County Planning Commission

I hereby certify that the preceding resolution was taken by the Planning Commission at a meeting conducted on June 14, 2017, by the following vote:

AYES:

NOES:

ABSENT:

**ABSTAIN**:

ATTEST: m.-le Jim Minnick, Secretary of Planning Commission

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# STATE OF CALIFORNIA

# STATE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION - RE: HELL'S KITCHEN GEOTHERMAL LLC.

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

**RESOLVED,** the CEC approves California Environmental Quality Act Findings for Hell's Kitchen Geothermal, LLC's Improved Silica Removal for Enhanced Geothermal Plant Performance project and approves grant agreement EPC-19-029 with Hell's Kitchen.

i. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) FINDINGS. Findings that, based on the lead agency Imperial County's Final Programmatic Environmental Impact Report (EIR), adopted Statement of Overriding Considerations, and the County's Resolution No. 2015-150 approving and adopting the EIR and Statement of Overriding Considerations, as based on the County's adopted Addendum to the EIR, Conditional Use Permit #16-0001, and the County's Resolution Nos. 2017-0037 and 2017-038, approving and adopting the Addendum and Conditional Use Permit, the work under the proposed agreement presents no new significant or substantially more severe environmental impacts beyond those already considered and mitigated.

ii. HELL'S KITCHEN GEOTHERMAL'S Improved Silica Removal for Enhanced Geothermal Plant Performance. The CEC approves Agreement EPC-19-029 with Hell's Kitchen Geothermal, LLC for a \$2,999,599 grant to develop and demonstrate a fundamentally new and innovative method for managing silica in geothermal operations. The new technology, Geothermal Micropillar Enabled Particle Separator, systematically separates silica particles from the geothermal brine based on their size as they flow through a series of carefully positioned staggered/offset posts. This technology has the potential to lower both the capital and operational costs of brine management at geothermal plants; and

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

# **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 CEC held on June 10, 2020.

AYE: NAY: ABSENT: ABSTAIN:

> Cody Goldthrite Secretariat