

**To:** Office of Planning and Research  
 PO Box 3044  
 1400 Tenth Street, Room 113  
 Sacramento, CA 95812-3044

**From:** California Energy Commission  
 715 P Street, MS-48  
 Sacramento, CA 95814

**Project Applicant:** GreenFire Energy Inc.

**Project Title:** Steam Dominated GreenLoop: Proof of Concept at The Geysers, California

**Project Location:**

Address	City	County
The Geysers Geothermal Area: Unit 16 steam field - Davies Estate Padsite, 1200 ft East and 1350 ft 95461	Lake	Lake County
584 Castro St # 2104	San Francisco 94114	San Francisco
5932 Ostrander Rd	Oakland 94618	Alameda

**Description of Nature, Purpose and Beneficiaries of Project:**

The purpose of this project is to advance the development of the Steam Dominated GreenLoop (SDGL) system (a closed-looped, down bore heat exchanger system), by demonstrating the SDGL system in an existing low-production well at The Geysers geothermal project to confirm the ability of the SDGL system to deliver enthalpy (the total heat content of a system that is equal to the internal energy of the system plus the product of the pressure multiplied by the volume of the system) to the surface without extracting water or reducing well pressure. The ability to produce power from steam dominated resources without losing water or pressure is crucial to future power generation at The Geysers and other steam dominated resources where geothermal production will decline without water injection. This project is a precursor to scaling the technology up for a proposed 100 MW or more commercial expansion project using the SDGL system. This project will confirm the utility of using the SDGL system in actual steam dominated field conditions.

The benefits of the project, as related to the California Investor-Owned Utility (IOU) electricity ratepayers, are to deliver greater electric reliability and lower cost with superior environmental attributes. The SDGL technology has the potential to make well retrofits the least expensive way to produce additional geothermal power.

The proposed well is located within the boundaries of Lake County, as follows: Unit 16 steam field - Davies Estate Padsite, 1200 ft East and 1350 ft South of the Northwest corner of Section 36, T11N, R8W, MD B&M Lake County, CA. The design and management work for this project will be conducted at the existing GreenFire facilities in San Francisco and Oakland, CA.

**Name of Public Agency Approving Project:** California Energy Commission

**Name of Person or Agency Carrying Out Project:** GreenFire Energy, Inc.

**Exempt Status:** *(check one)*

- Ministerial Exemption (Pub. Resources Code § 21080(b)(1); Cal. Code Regs., tit. 14, § 15268);
- Declared Emergency (Pub. Resources Code § 21080(b)(3); Cal. Code Regs., tit. 14, § 15269(a));
- Emergency Project (Pub. Resources Code § 21080(b)(4); Cal. Code Regs., tit. 14, § 15269(b)(c));
- Categorical Exemption. State type and section number  
Cal. Code Regs., tit. 14, § 15301 ; Cal. Code Regs., tit. 14, § 15302

Statutory Exemptions. State code number.

Authority cited: Sections 21083 and 21110, Public Resources Code. Reference: Sections 21108, 21152, and 21152.1, Public Resources Code.

GreenFire Energy, Inc.

Common Sense Exemption. (Cal. Code Regs., tit. 14, §15061(b)(3))

**Reasons why project is exempt:**

The reasons for the CEQA categorical exemptions are listed below. CEC considered the CEQA findings of the Lead Agency, Lake County, to reach its own conclusions, below, on the project:

**1. For Cal. Code Regs. (CCR), Title 14, Section 15301(b) (Existing Facilities):** Section 15301 exempts the operation, repair, maintenance, permitting, leasing, licensing, or minor alteration of existing public or private structures, facilities, mechanical equipment, or topographical features, involving negligible or no expansion of existing or former use, this includes in subsection (b): “Existing facilities of both investor and publicly-owned utilities used to provide electric power, natural gas, sewerage, or other public utility services.” This project will retrofit an existing geothermal production well to demonstrate the ability of the SDGL system to deliver enthalpy to the surface without extracting water or reducing well pressure. This is an existing facility with no or negligible expansion of an existing use.

**2. For Cal. Code Regs. (CCR), Title 14, Section 15302 (c) (Replacement or Reconstruction of Existing Utility Systems):** Section 15302 exempts the replacement or reconstruction of existing structures and facilities where the new structure will be located on the same site as the structure replaced and will have substantially the same purpose and capacity as the structure replaced, this includes in subsection (c): “Replacement or reconstruction of existing utility systems and/or facilities involving negligible or no expansion of capacity.” The existing geothermal production well identified for use to act as the proof of concept project well for the SDGL system is an intermittently producing low production well. No new drilling of the well will be performed as part of the project. Instead, a down bore heat exchanger (DBHX) composed principally of vacuum insulated tubing will be inserted into the existing well and a new well head component (a header) will be added on the surface to properly suspend the DBHX in the selected well. Water will be circulated in the DBHX to capture heat from the well, principally from the latent heat of vaporization associated with the condensation of steam from the geothermal resource on the DBHX, which heat will be transported to the surface by the water circulated in the DBHX. At the surface, instrumentation will be added to measure and assess the performance of the SDGL system and the DBHX. Analysis has suggested that with the SDGL system the well will be able to produce consistently, rather than intermittently, but the total power that can be produced from the well at any specific time will not be substantially increased.

**Lead Agency**

Contact Person: Benson Gilbert Area code/Telephone/Ext: 916-776-0763

**If filed by applicant:**

- 1. Attach certified document of exemption finding.
- 2. Has a Notice of Exemption been filed by the public agency approving the project?  Yes  No

Signature: Benson Gilbert Date: 04-29-2022 Title: Mechanical Engineer

Signed by Responsible Agency

Signed by Lead Agency

Signed by Applicant

Date received for filing at OPR: \_\_\_\_\_