PMC-EF2a
(2.04.02)

U.S. DEPARTMENT OF ENERGY
EERE PROJECT MANAGEMENT CENTER
NEPA DETERMINATION

RECIPIENT: General Atomics **STATE:** CA

PROJECT TITLE : Sulfur Based Thermochemical Heat Storage for Based Load Concentrated Solar Power Generation

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0000104	DE-EE0003588	GFO-10-474	EE3588

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Order 451.1A), I have made the following determination:

CX, EA, EIS APPENDIX AND NUMBER:
Description:

B3.6 Siting, construction (or modification), operation, and decommissioning of facilities for indoor bench-scale research projects and conventional laboratory operations (for example, preparation of chemical standards and sample analysis); small-scale research and development projects; and small-scale pilot projects (generally less than two years) conducted to verify a concept before demonstration actions. Construction (or modification) will be within or contiguous to an already developed area (where active utilities and currently used roads are readily accessible).

A9 Information gathering (including, but not limited to, literature surveys, inventories, audits), data analysis (including computer modeling), document preparation (such as conceptual design or feasibility studies, analytical energy supply and demand studies), and dissemination (including, but not limited to, document mailings, publication, and distribution; and classroom training and informational programs), but not including site characterization or environmental monitoring.

Rational for determination:

This is a new competitive award resulting from FOA DE-FOA-0000104 (Baseload Concentrating Solar Power Generation).

Project Funding will be used to research and validate the use of sulfur based thermochemical cycles to store heat from concentrating solar power (CSP) plants. The proposed process has three chemical reaction steps. First sulfur dioxide undergoes a disproportionation reaction in water to form sulfur and sulfuric acid. The sulfur is stored and then combusted in air to provide high temperature heat for electricity generation. The sulfuric acid is decomposed using high temperature solar heat back into sulfur dioxide, water and oxygen. This closed loop process produces no effluents and emits no green house gases.

There are three main project objectives:
I. To study the sulfur generating disproportionation reaction and develop it into a practical engineering process step
II. To carry out preliminary process components design and experimental validation. The engineering data will be used for process integration between the CSP plant, the sulfur processing and storage plant and the electricity generation unit.
III. To demonstrate the economics and safety of a CSP plant integrated with sulfur storage.

The proposed project consists of only lab work in existing facilities at General Atomics and DLR (cost share). There will be construction of prototype equipment for testing. The prototypes will be bench top models which will be housed inside either a fume hood or a dedicated enclosure within the present lab space depending on the size of the final designs. If an enclosure is used, then there will be work to connect its exhaust to existing ventilation but the construction work associated with it will be minimal. No new construction (or expansion of an existing building) is included in the work scope.

The proposed project consists of research and development; therefore it is categorically excluded under B3.6 and A9 from further NEPA review.

NEPA PROVISION
Note to Specialist :

None Given.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Electronically Signed Date: 8/24

NEPA Compliance Officer

FIELD OFFICE MANAGER DETERMINATION

☐ Field Office Manager review required

NCO REQUESTS THE FIELD OFFICE MANAGER REVIEW FOR THE FOLLOWING REASON:

☐ Proposed action fits within a categorical exclusion but involves a high profile or controversial issue that warrants Field Office Manager's attention.
☐ Proposed action falls within an EA or EIS category and therefore requires Field Office Manager's review and determination.

BASED ON MY REVIEW I CONCUR WITH THE DETERMINATION OF THE NCO :

Field Office Manager's Signature: _____ Date: _____

Field Office Manager