



**CONTRACT REQUEST FORM (CRF)**

CEC-94 (Revised 01/13)

CALIFORNIA ENERGY COMMISSION



Address:	1 CYCLOTRON RD BLDG 90R2000	Address:	1 Cyclotron Road
City, State, Zip:	BERKELEY, CA 94720-8130	City, State, Zip:	Berkeley, CA 94720-8099
Phone:	510-486-4218 /	Fax:	- -
E-Mail:	bequayle@lbl.gov	E-Mail:	mlfischer@lbl.gov

**L) Selection Process Used** (For amendments, address amendment exemption or NCB, do not identify solicitation type of original agreement. )

Solicitation Select Type Solicitation #: \_\_\_\_\_ # of Bids: \_\_\_\_\_ Low Bid?  No  Yes  
 Non Competitive Bid (Attach CEC 96)  
 Exempt Other Governmental Entity

**M) Contractor Entity Type**

Private Company (including non-profits)  
 CA State Agency (including UC and CSU)  
 Government Entity (i.e. city, county, federal government, air/water/school district, joint power authorities, university from another state)

**N) Is Contractor a certified Small Business (SB), Micro Business (MB) or DVBE?**  No  Yes

If yes, check appropriate box:  SB  MB  DVBE

**O) Civil Service Considerations**

Not Applicable (Agreement is with a CA State Entity or a membership/co-sponsorship)  
 Public Resources Code 25620, et seq., authorizes the Commission to contract for the subject work. (PIER)  
 The Services Contracted:  
 are not available within civil service  
 cannot be performed satisfactorily by civil service employees  
 are of such a highly specialized or technical nature that the expert knowledge, expertise, and ability are not available through the civil service system.  
 The Services are of such an:  
 urgent  
 temporary, or  
 occasional nature  
 that the delay to implement under civil service would frustrate their very purpose.

**Justification:**

The contract price is reasonable, particularly considering the facility and expertise provided by the contract terms. Research will be conducted by a national laboratory. Salaries and wages are in accordance with costing practices for all Department of Energy programs.

**P) Payment Method**

A. Reimbursement in arrears based on:  
 Itemized Monthly  Itemized Quarterly  Flat Rate  One-time  
 B. Advanced Payment  
 C. Other, explain:

**Q) Retention**

1. Is Agreement subject to retention?  No  Yes  
 If Yes, Will retention be released prior to Agreement termination?  No  Yes

**R) Justification of Rates****S) Disabled Veteran Business Enterprise Program (DVBE)**

1.  Exempt (Interagency/Other Government Entity)  
 2.  Meets DVBE Requirements DVBE Amount:\$ \_\_\_\_\_ DVBE %: \_\_\_\_\_  
 Contractor is Certified DVBE  
 Contractor is Subcontracting with a DVBE: \_\_\_\_\_  
 3.  Contractor selected through CMAS or MSA with no DVBE participation.  
 4.  Requesting DVBE Exemption (attach CEC 95)



T) Miscellaneous Contract Information		
1. Will there be Work Authorizations?	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes
2. Is the Contractor providing confidential information?	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes
3. Is the Contractor going to purchase equipment?	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes
4. Check frequency of progress reports <input type="checkbox"/> Monthly <input checked="" type="checkbox"/> Quarterly <input type="checkbox"/> _____		
5. Will a final report be required?	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes
6. Is the agreement, with amendments, longer than a year? If yes, why?	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes
<p>The Department of General Services has agreed to give the Commission blanket authority to execute multi-year contracts to support the Commission's RD&amp;D Programs.</p>		

u) The following items should be attached to this CRF (as applicable)		
1. Exhibit A, Scope of Work	<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Attached
2. Exhibit B, Budget Detail	<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Attached
3. CEC 96, NCB Request	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> Attached
4. CEC 30, Survey of Prior Work	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> Attached
5. CEC 95, DVBE Exemption Request	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> Attached
6. CEQA Documentation	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> Attached
7. Resumes	<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Attached
8. CEC 105, Questionnaire for Identifying Conflicts		<input checked="" type="checkbox"/> Attached

\_\_\_\_\_ Agreement Manager      \_\_\_\_\_ Date      \_\_\_\_\_ Office Manager      \_\_\_\_\_ Date      \_\_\_\_\_ Deputy Director      \_\_\_\_\_ Date

## Exhibit A - Statement of Work

### Title of project

### Natural Gas Leakage from Residential Buildings in California

### Background

The U.S. Department of Energy has directed the University of California to perform the work stated in this Appendix A for the Energy Commission. Lawrence Berkeley National Laboratory (LBNL), a laboratory owned by the Department of Energy, is located at 1 Cyclotron Road, Berkeley, CA, 94720. The University of California, a not-for-profit corporation organized under the laws of the State of California, with its principal place of business at 1111 Franklin Street, Oakland, CA 94607-5200, manages and operates Lawrence Berkeley National Laboratory under DOE Contract No. DE-AC02-05CH11231.

The California Energy Resources Conservation and Development Commission (Energy Commission) is an agency organized under the laws of the State of California with a principal place of business at 1516 Ninth Street, Sacramento, California 95814.

### Project Goals and Objectives

#### Problem Statement

Emissions of natural gas from California's energy infrastructure are estimated to be ~ 40 billion ft<sup>3</sup>/yr or ~ 2% of total consumption<sup>1</sup>. Identifying and controlling these losses would provide benefits for local safety, regional air quality, and global climate. Because the losses likely occur throughout different sub-sectors of the natural gas system, a coherent effort to quantify leakage across California's infrastructure is needed in order to plan and subsequently evaluate the success of a full suite of mitigation efforts.

#### Residential Leakage

One potentially important subsector of natural gas infrastructure that has not been carefully evaluated is residential structures including single-family homes and multi-unit buildings. While leakage is typically ignored, residential usage accounts for ~ 22% of total natural gas consumption in California, and the potential for losses could easily constitute a significant fraction of total emissions.

An ongoing Energy Commission project with UC Davis and LBNL has taken initial measurements to gauge the magnitude of this potential leakage path. Researchers conducted short-term (~ 1 hr) methane leakage measurements in a half dozen single-family homes in the San Francisco Bay Area. Using a blower door to introduce a controlled building air inflow, researchers measured clearly detectable enhancements of methane, above the outdoor background levels in all but one home. From the measurements, estimates of methane leakage rates in the six homes had a median value of 6.7 +/- 2.2 sccm. Supporting the attribution of the added methane to a natural gas (as opposed to biological) source, the isotopic composition of air in the houses were measured to be enriched in <sup>13</sup>CH<sub>4</sub> relative to the outdoor background air in an amount approximately consistent with that expected from local natural gas. Assuming the average leak

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<sup>1</sup> CEC. 2011. *Energy Almanac*, <http://energyalmanac.ca.gov/naturalgas/index.html>

rate found in these houses applies to the broader housing stock in California, total residential leakage would be equivalent to 0.3% of residential consumption and 14% of total methane emissions currently attributed to California's natural gas sector in the State emission inventory. Taken together, the available evidence suggests that leakage from residential (and perhaps commercial buildings) may constitute a non-trivial fraction of California's natural gas-related methane emissions to the atmosphere.

The objectives of this Agreement are to measure post-meter natural gas methane leaks in a representative sample of single-family California residences, estimate the distribution of likely leak rates, and determine total residential methane leakage.

### **Technical and economic/cost performance goals and objectives**

- A. The technical goal of this project is to estimate total natural gas methane leakage from single-family residences in California.

The specific, technical objective upon which this project's success will be evaluated is: total residential methane emissions are estimated within a factor of two.

- B. The economic/cost goal of this project is to estimate the value of fuel leaked.

The specific, economic/cost objective upon which project's success will be evaluated is: the potential value of from total fuel saved and GHG emissions mitigated .

## **1.0 PRELIMINARY ACTIVITIES**

### **1.1 Attend Kick Off Meeting**

The Facility Operator's Project Manager (Principal Investigator) shall attend a "kick off" meeting with the Commission Contract Manager to review the Energy Commission's expectations for: accomplishing tasks described in the work statement; administrative requirements in the terms and conditions of the contract (e.g., invoicing, statements vesting title, prior approvals, data disclosure limitations, monthly progress reporting format and content, etc.); and the Energy Commission's roles and responsibilities. The location of this meeting shall be designated by the Commission Contract Manager.

### **1.2 Describe Synergistic Projects**

*No synergistic projects were identified with respect to the proposed work and so the following does not apply.*

Documentation of synergistic project value assessments will be received, reviewed and approved in writing by the Commission Contract Manager before: 1) any PIER funds under this contract are disbursed, and 2) PIER-funded work on Technical Tasks may begin.

Provide the following information about the synergistic projects that will enhance information and technology exchanges with this project:

- Assessed value of each synergistic project.

- Title, contact name, address and telephone number for each identified synergistic project.
- Written concurrence from each technical manager of the identified synergistic projects that information and technology derived from the synergistic project is unrestricted and available for exchange and collaboration in conjunction with this project.

### **1.3 Identify Required Permits**

Prepare and submit to the Commission Contract Manager a list of all permits required for construction and/or operation of equipment or the project facility, the name, address and telephone number of the permitting jurisdictions or lead agencies, and the schedule the Facility Operator will follow in applying for and obtaining these permits.

If no permits are required to conduct this project, state this finding.

### **1.4 Obtain Required Permits**

Facility Operator will supply written certification that Facility Operator has received all necessary and required permits to construct, operate, or test the proposed equipment or facility as soon as they are received. During this project, the Facility Operator shall comply with all applicable laws, ordinances, regulations and standards. If the Facility Operator is required to obtain permits specifically for performance of this Agreement, such permit expenses shall be separately identified as a cost and shall be reimbursable by the Energy Commission.

### **1.5 Prepare Production Readiness Plan**

This activity does not apply to this project because it does not involve the design, development, or demonstration of energy-related technology.

Prepare a written production readiness plan that includes:

- Identification of critical production processes, equipment, facilities, manpower, and support systems that will be needed to produce a commercially viable product;
- Capacity constraints imposed by the design under consideration for internal manufacturing capabilities, as well as suppliers. The project manufacturing effort may include “proof of production processes;”
- Identification of hazardous or non-recyclable materials;
- A projected “should cost” for the product in production at some expected rate;
- The expected investment threshold required to launch the commercial product;
- An implementation plan to ramp up to full production.

The degree of detail in the production readiness discussion should be proportional to the complexity of producing the proposed product and its state of development.

The Production Readiness Plan shall be reviewed by the Commission Contract Manager. If the Commission Contract Manager determines that the plan is unsatisfactory, Facility Operator shall revise it until it meets the Commission Contract Manager's reasonable requirements.

## TECHNICAL TASKS

### Technical Task List

Task 2.0	Study Design
Task 3.0	Building Leakage Measurements
Task 4.0	State Emissions Analysis

### Glossary

*Specific terms and acronyms used throughout this work statement are defined as follows:*

Acronym	Definition
CH <sub>4</sub>	Methane
CPR	Critical Project Review
Energy Commission	California Energy Commission
GHG	Greenhouse Gas
LBNL	Lawrence Berkeley National Laboratory
PIER	Public Interest Energy Research

Task descriptions include goals, Contractor activities, and deliverables. The deliverables, such as test plans, technical reports and other interim deliverables, for each task are defined to the extent possible, but are subject to change based on recommendations from the Project Manager and the approval of the Commission Contract Manager. The Contractor shall submit a draft of each deliverable, unless described differently in the Technical Tasks, to the Commission Contract Manager for review and comment in accordance with the approved Schedule of Deliverables. Deliverables not requiring a draft version are indicated by marking “(no draft)” after the deliverable name.

The Commission Contract Manager will provide written comments back to the Contractor on the draft deliverable within 10 working days of receipt. Once agreement has been reached on the draft, the Contractor shall submit the final deliverable to the Commission Contract Manager. The Commission Contract Manager shall provide written approval of the final deliverable within 5 working days of receipt. Key elements from this deliverable shall be included in the Final Report for this project.

When creating technical deliverables, the Facility Operator shall use and follow, unless otherwise instructed in writing by the Commission Contract Manager, the latest version of the PIER Style Manual published on the Energy Commission's web site: <http://www.energy.ca.gov/contracts/pier/contractors/index.html>.

## **Task 2.0 Study Design**

The goal of this task is to design a study and obtain needed approvals for the methane leak measurement project.

### **The Contractor shall:**

- Identify and create a table of buildings in each building class to measure the number of representative building classes within the single-family housing stock (e.g., the range of location, building age, and owner-occupied v.s. rental).
- Identify, interview, and subcontract with energy efficiency measurement subcontractors to measure leakage rates in Southern and Northern California (see Appendix A). The Recipient will subcontract these activities via a competitive bidding process that complies with California laws and regulations, including State Contracting Manual Section 3.06. Submit subcontracts to the Energy Commission.
- Complete an LBNL human subjects project review. Prepare a Human Subject Review Document describing potential impacts to study subjects.

### **Deliverables:**

- Table of buildings in each building class
- Subcontracts for leakage measurement subcontractors
- Human subjects review document approved by LBNL human subjects review panel.

## **Task 3.0 Building Leakage Measurements**

The goal of this task is to train subcontractors and conduct building methane leakage measurements in 60-75 sample houses.

### **The Contractor shall:**

- Prepare an operation plan and instrumentation for building methane leakage measurements.
- Document the measurement protocol and train the energy efficiency measurement subcontractors.
- Monitor and review subcontractor measurement results.
- Prepare a data set of measured leakage rates.

### **Deliverables:**

- Operation plan and instrumentation for building methane leakage measurements
- Data set of measured leakage rates

## **Task 4.0 State Emissions Analysis**

The goal of this task is to estimate methane emissions from California residences.

### **The Contractor shall:**

- Estimate distributions of leakage rate by building class. Prepare an estimate of leakage distributions.
- Estimate state total emissions with uncertainties. Prepare an estimate of state total methane leakages for single family residences.

### **Deliverables:**

- Estimate of leakage distributions
- State total methane leakage for single family residences

## **Task 5.0 REPORTING TASKS**

All reports shall be delivered to:

Accounting Office, MS-2  
California Energy Commission  
1516 9<sup>th</sup> Street, 1<sup>st</sup> Floor  
Sacramento, CA 95814

## **Task 5.1 Quarterly Progress Reports**

The Contractor shall prepare *written* Quarterly Progress Reports to the Commission Contract Manager by the 30th of the following month, starting after the Department of General Service's contract approval date and shall continue each month until the Final Report has been accepted by the Commission Contract Manager. The progress report should summarize all Agreement activities conducted by the Contractor for the reporting period, including an assessment of the ability to complete the Agreement within the current budget and any anticipated cost overruns. Attachment A-2 provides a recommended format and content requirements for the Quarterly Progress Report.

## **Task 5.2 Final Report**

The Final Report shall be a public document. If the Contractor will be preparing a confidential version of the final report as well, the Contractor shall perform the following tasks for both the public and confidential versions of the Final Report. When creating the Final Report, the Facility Operator shall use and follow, unless otherwise instructed in writing by the Commission Contract Manager, the latest version of the PIER Style Manual published on the Energy Commission's web site:

<http://www.energy.ca.gov/contracts/pier/contractors/index.html>

### **Subtask 5.2.1 Final Report Outline**

- Contractor shall prepare and submit to the Commission Contract Manager for review an outline of the Final Report describing the original purpose, approach and results of the project.

- The outline shall be submitted to the Commission Contract Manager for review. The Commission Contract Manager shall determine if the outline is satisfactory. If the Commission Contract Manager determines that the outline is unsatisfactory, he or she will, in a timely manner, provide to the Contractor written comments, which indicate how the outline can be improved. The Contractor shall revise the outline to meet the Commission Contract Manager's requirements. Upon finding the final report outline satisfactory, the Commission Contract Manager shall provide to the Contractor written approval of it.

#### **Subtask 5.2.2 Draft Final Report for Comment**

- The Contractor shall prepare and submit to the Commission Contract Manager a draft Final Report on the project. The format of the report shall follow the approved outline.
- The draft final report shall be submitted to the Commission Contract Manager for review and to determine, in a timely manner, if it is satisfactory. If the Commission Contract Manager determines that it is unsatisfactory, he or she will, provide to the Contractor written comments, which indicate how it can be improved. The Contractor shall revise the draft final report incorporating the Commission Contract Manager's corrections and required changes. Upon finding the revised draft to be satisfactory, the Commission Contract Manager shall provide to the Contractor written approval of it.

#### **Subtask 5.2.3 Final Report**

- The Contractor shall prepare Final Report and submit it to the Commission Contract Manager after receiving the Commission Contract Manager's written approval of the draft Final Report. This task shall be deemed complete and accepted by the Commission only when the Commission Contract Manager approves the Final Report in writing. Upon approval, the Contractor shall submit two unbound copies of the Final Report to the Commission Contract Manager.

#### **Task 5.3 Final Meeting**

Contractor shall meet with the Commission Contract Manager to present findings, conclusions, and recommended next steps (if any) for the project.

Contractor will also discuss with the Commission Contract Manager the following contract close-out items:

- What to do with any state-owned equipment (Options), if applicable
- Commission's request for specific "generated" data (not already provided in contract deliverables)
- Need to document Contractor's disclosure of "subject inventions" developed under the contract
- Need to file UCC-1 form re: Commission's interest in patented technology
- Other "surviving" contracts provisions.

## **Task 5.4 Critical Project Reviews**

The Energy Commission will conduct critical project reviews at the conclusion of the following task: State Emissions Analysis (Task 2.3).

Critical project reviews are meetings between the Facility Operator, the Energy Commission Contract Manager and other individuals selected by the Commission Contract Manager to provide objective, technical support to the Energy Commission. The purpose of these meetings is to discuss with the Facility Operator the status of the project and its progress toward achieving its goals and objectives. These meetings may take place at the Energy Commission offices in Sacramento, or at another, reasonable location determined by the Commission Contract Manager.

Prior to the critical project review meeting, the Facility Operator will provide the task deliverable(s) to the Commission Contract Manager sufficiently in advance to allow the Contract Manager's review of the deliverable document(s) before the review meeting. If not already defined in the Work Statement, the Commission Contract Manager shall specify the contents of the deliverable document(s).

At the critical project review meeting, the Facility Operator shall present the required technical information and participate in a discussion about the project with the Commission Contract Manager and other meeting attendees, if any.

Following the critical project review meeting, the Energy Commission will determine whether the Facility Operator is complying satisfactorily with the Work Statement and whether the project is demonstrating sufficient progress toward achieving its goals and objectives to warrant continued PIER financial support for the project.

## **Sponsor's Key Personnel and Agreement Management**

- A. The name and area code/phone number of the California Energy Commission's Contract Manager is listed on Exhibit F and is the official technical contact for the Energy Commission.

The Sponsor's Contract Manager is responsible for the day to day project status, decisions and communications with the Facility Operator Project Manager (Principal Investigator). The Commission Contract Manager will review and approve all project deliverables, reports, and invoices.

The Sponsor may change the Contract Manager by notice given to the Facility Operator at any time signed by the Contract Officer of the Energy Commission.

- B. The name and area code/phone number of the California Energy Commission's Contract Officer is listed on Exhibit F and will be the Contract Officer for the Agreement and is the official administrative contact for the Energy Commission.

## **Facility Operator's Key Personnel and Agreement Administration**

The Facility Operator is obligated to comply with the terms and conditions of its Management and Operating (M&O) Contract with the DOE when performing work under this agreement. The DOE may require substitution of the named "key personnel" under this agreement should the DOE

determine that the services of the Project Manager (Principal Investigator) or other named key personnel are necessary to meet the Facility Operator's M&O Contract obligations to the DOE. Should the DOE direct the Facility Operator to substitute the named key personnel under this agreement, the Facility Operator shall inform the Energy Commission of the directed substitution in accordance with paragraphs A and B below. In the event that the Energy Commission does not concur with the substitution of named key personnel as directed by the DOE, this agreement shall be terminated in accordance with the Termination provision of the terms and conditions.

- A. The name and area code/phone number of the National Laboratory's Project Manager (Principal Investigator) is on Exhibit F and will be the Project Manager (Principal Investigator) for this project and is the official technical contact for Lawrence Berkeley National Laboratory.

The Facility Operator's Project Manager (Principal Investigator) is responsible for the day to day project status, decisions, and communications with the Sponsor's Contract Manager. The Facility Operator's Project Manager (Principal Investigator) will review and approve all project deliverables and reports.

The Facility Operator's Project Manager (Principal Investigator) is designated as "key personnel" under the Agreement. The Energy Commission reserves the right to prior written concurrence of any substitution of the Project Manager (Principal Investigator).

- B. The key personnel are listed on Exhibit F in this agreement.

Facility Operator's key personnel may not be substituted without the Commission Contract Manager's prior written concurrence. Such concurrence shall not be unreasonably withheld. All other personnel may be substituted by Facility Operator, with written notification made to the Commission Contract Manager.

- C. The name and area code/phone number of National Laboratory Agreement Administrator is on Exhibit F and will be the Agreement Administrator for this Agreement and is the official administrative contact for Lawrence Berkeley National Laboratory.

### **Facility Operator's key subcontractors**

The Facility Operator's key subcontractors are listed on Exhibit F in this agreement.

Facility Operator's key subcontractors may not be substituted without the Commission Contract Manager's prior written concurrence. Such concurrence shall be timely provided and not unreasonably withheld. Delay in written concurrence may result in a work stoppage of subcontract work. All other subcontractors may be substituted by Facility Operator, with written notification made to the Commission Contract Manager.

## Appendix A: Details of Field Sampling Plan

LBNL will subcontract measurements of natural gas methane leakages in 60-75 homes in California (depending on cost) from the nine most populous counties where approximately 70% of Californians are resided in.

North coastal: Santa Clara, Alameda, Contra Costa, and Sacramento

South coastal: Los Angeles, Orange, San Diego, San Bernardino, and Riverside

Sampling will be conducted in single-family homes only. This is because the majority (over 80%) of California population lives in single-family homes and it is cost-prohibitive to expand the test protocol to include multifamily due to the complexity of controlling the ventilation of many sub-units in large buildings.

Approximately 25 homes will be tested in the north coastal area, and 35 homes will be from the south coastal area of California. This means that approximately four to eight homes will be tested in each of the nine counties.

Small gas leaks in homes can occur at piping and appliances. Anecdotal observations from home inspections suggest that aging of pipe-fittings and operating valves are possible causes. For this reason, the sampling will focus more on older homes. LBNL will direct subcontractors to select homes that are from the older vintages, e.g., pre-1980, and 1980–2000, and fewer new homes, e.g., post-2000.

### Subcontractors

Field sampling will be conducted by licensed Home Energy Rating System (HERS) raters in California. The HERS program was established by the California Energy Commission to rate the energy efficiency of homes, and also to prioritize the investment in home energy efficiency measures. Contractors will be selected based on their knowledge and ability to recruit homes that capture the relevant variation building characteristics.

Based on previous building leakage and indoor air quality studies conducted by LBNL, the estimated cost of field sampling, including recruiting and traveling is \$800-1000 per home. There is also an upfront cost of about 5 person-day (assuming \$1,000 per person-day) to comply with human subject protocol and for the field technician be trained to operate the methane gas analyzer. In addition, the budget estimates below include another 5 person-day for data transfer and communication. A small financial incentive (about \$50 per home) will be offered to homeowners to compensate for their time participating in the study.

North coastal subcontractor  $\$1000 \times 25 \text{ homes} + \$10,000 = \$35,000$

South coastal subcontractor  $\$1000 \times 35 \text{ homes} + \$10,000 = \$45,000$

To: Office of Planning and Research
PO Box 3044, 1400 Tenth Street, Room 222
Sacramento, CA 95812-3044

From: California Energy Commission
1516 Ninth Street, MS-48
Sacramento, CA 95814

Project Title: Assessment of Residential Natural Gas Emissions

Project Location - Specific: 1 CYCLOTRON RD

Project Location - City: BERKELEY, CA Project Location - County: Alameda

Description of Project:

The proposed study will include residential building leakage measurements and statistical analyses that quantify total residential natural gas methane emissions from California. Project planning will include a statistical design to categorize California housing stock and identify representative residential buildings. Methane leakage and ventilation measurements will then be conducted in cooperation with building energy specialists. Measurement and analysis will include an iterative statistical approach that assesses the measured leakage rate and building variables to estimate the distribution of building leakage across the housing stock and extrapolate to estimate total methane leakage expected from residential buildings across California. While dependent on the degree of variation found in the actual leakage measurements, 50 and 100 building measurements are expected to be sufficient to provide a primary research product including the estimated total residential methane leakage from California with 30% accuracy (68% CI).

The products of the study will include documentation of the study design, measurement results, the analysis of estimated methane leakage, and recommendations for policies to reduce leakage (for example, incentives for building retrofits and building code improvements for new construction). The contractor will competitively award subcontracts to building retrofit contractors in Northern and Southern California to conduct local measurements.

Name of Public Agency Approving Project: California Energy Commission

Name of Person or Agency Carrying Out Project: DOE- Lawrence Berkeley National Laboratory

Exempt Status: (check one)

- Ministerial (Sec. 21080(b)(1); 15268);
Declared Emergency (Sec. 21080(b)(3); 15269(a));
Emergency Project (Sec. 21080(b)(4); 15269(b)(c));
[X] Categorical Exemption. State type and section number 14 CCR 15306
Statutory Exemptions. State code number.
Common Sense Exemption. 15061(b)(3)

Reasons why project is exempt:

The project involves taking measurements of methane emissions at California residences.

Lead Agency

Contact Person: Simone Brant Area code/Telephone/Ext: 916-327-2201

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: \_\_\_\_\_

Date: \_\_\_\_\_

Title: \_\_\_\_\_

Signed by Lead Agency

Signed by Applicant

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

**RESOLUTION NO:**

**STATE OF CALIFORNIA**

**STATE ENERGY RESOURCES  
CONSERVATION AND DEVELOPMENT COMMISSION**

RESOLUTION - RE: DOE- LAWRENCE BERKELEY NATIONAL LABORATORY

**RESOLVED**, that the State Energy Resources Conservation and Development Commission (Energy Commission) adopts the staff CEQA findings contained in the CEC 94 Contract Request Form or CEC 270 Grant Request Form (as applicable).

**RESOLVED**, that the Energy Commission approves Agreement 500-13-008 with **DOE- Lawrence Berkeley National Laboratory** to survey methane emissions from residential buildings.

**FURTHER BE IT RESOLVED**, that the Executive Director shall execute the same on behalf of the Energy Commission.

**CERTIFICATION**

The undersigned Secretariat to the Commission does hereby certify that the foregoing is a full, true, and correct copy of a Resolution duly and regularly adopted at a meeting of the California Energy Commission held on June 18, 2014.

AYE: [List of Commissioners]

NAY: [List of Commissioners]

ABSENT: [List of Commissioners]

ABSTAIN: [List of Commissioners]

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Harriet Kallemeyn,  
Secretariat