

HEALTH EFFECTS INSTITUTE ENERGY
**REQUEST FOR QUALIFICATIONS AND PROPOSAL
FOR QUALITY ASSURANCE OVERSIGHT**

FEBRUARY 2022

SUMMARY

The Health Effects Institute Energy (HEI Energy) is seeking qualified contractors to provide quality assurance services for eleven research studies on air pollution and health.

BACKGROUND

The mission of HEI Energy is to provide high-quality, impartial science on the potential human population exposures and health effects from onshore development of oil and natural gas from shale and other unconventional resources (UOGD) across the United States.

As accurate scientific conclusions depend on the validity of the underlying data and the precision with which it is reported, HEI Energy uses third-party quality assurance (QA) oversight for most research projects that involve human subjects and other projects with a high potential for use in regulatory decisions. These procedures augment the general QA/QC procedures applied to all HEI Energy studies (through staff and Committee oversight) and provide assurance that data are collected under defined conditions and are reliable and traceable from collection through final analyses and reporting. Unless otherwise specified, the HEI Energy special QA oversight entails two audits:

1. During the course of the study. Generally, the 1–2-day QA audit during the course of the study is conducted on-site (although exceptions are made, for example, because of travel restrictions).
2. At the end of the study with review of the data presented by the investigator in the HEI Energy Final Report. The QA audit of the final report is conducted remotely.

A description of HEI Energy Research and Review Processes and Quality Assurance/Quality Control procedures for HEI Energy studies are enclosed (see Attachments 1 and 2).

DESCRIPTION OF STUDIES NEEDING QA OVERSIGHT

HEI Energy released two Requests for Applications (RFAs), “Community Exposures Associated with Unconventional Oil and Natural Gas Development,” for to improve understanding of potential community exposures that come directly from unconventional oil and gas development (UOGD) in the United States, RFA E20-1 focuses on air quality and noise and RFA E20-2 focuses on water quality.

Brief descriptions of the individual studies including their current status and QA needs are described below. More details about the studies and the composition of each study team can be found at <https://www.heienergy.org/research>.

RFA E20-1, “Community Exposures Associated with Unconventional Oil and Natural Gas Development: Air Quality and Noise”

RFA E20-1 solicits applications for research to identify the UOGD processes that have resulted or might result in releases of chemicals or noise to outdoor air and quantify the spatial and temporal variability in human exposures to UOGD-generated atmospheric chemical concentrations. The research couples air quality and noise monitoring with fate and transport and source apportionment modeling. The data will be made publicly available at the end of the study period. *Note: Preference for the same auditor for the three studies funded under this RFA.*

Study # 1: Measuring and Modelling Air Pollution and Noise Exposure Near Unconventional Oil and Gas Development in Colorado

The objective of this study is to develop community exposure profiles for A- and C-weighted noise and atmospheric chemical concentrations over the lifecycle, from site preparation through production, of UOGD multi-well pads. The study design includes consideration of existing data and collection of new stationary and mobile measurements at different multi-well UOGD pads. In addition to planned measurements, the investigators will collaborate with investigators of Study #3 to develop and apply their UOGD emissions model to simulate emissions and their dispersion (using AERMOD) around individual wellpads. Field measurements will be used to assess the performance of the model simulations at the neighborhood scale.

Location: Denver-Julesburg Region, Colorado

Duration: 3 years

Start date and anticipated end date: 2/1/2022 to 1/31/2025

Status: beginning of year 1

QA needs: On-site audit during study and off-site audit of the final report

Study #2: Assessing source contributions to air quality and noise in unconventional oil shale plays

The objective of this study is to understand potential community exposure to UOGD-associated chemicals and radioactivity in air as well as noise. The investigators will apply the following methods to achieve their goals: 1) Monitor air quality and noise using a stationary monitoring platform and passive sampling to understand how potential exposures vary across the regions and over different time scales, 2) combine existing air monitoring data and original data with statistical models (non-negative matrix factorization) to distinguish UOGD from other sources of chemicals in the air and noise sources, 3) leverage satellite data to examine the association between natural gas flaring and air quality using regression modeling, and 4) use field measurements to assess the performance of the model developed by the investigators of studies 1 and 3.

Location: Denver-Julesburg Region, Colorado; Eagle Ford Region and Permian Region, Texas

Duration: 3 years

Start date and anticipated end date: 1/1/2022 to 12/31/2024

Status: beginning of year 1

QA needs: On-site audit during study and off-site audit of the final report

Study #3: Predictive, source-oriented modeling and measurements to evaluate community exposures to air pollutants and noise from unconventional oil and gas development

The objective of this study is to generate a broadly applicable community model which can assess potential exposures to air pollutants from UOGD. The research builds on preexisting model to predict the magnitude and intermittency of emissions at individual sources on UOGD sites, and, coupled to dispersion modeling, generate concentration fields of pollutants that can be used to assess community exposures on the local scale. The investigators will conduct mobile and stationary measurements of chemicals in air and noise to evaluate and refine the model. They will combine their own measurements with measurements collected by investigators of studies 1 and 2 to assess model performance. They will also estimate potential exposures to primary and secondary pollutants from UOGD emissions on a regional scale.

Location: Eagle Ford Region, Texas

Duration: 3 years

Start date and anticipated end date: 12/1/2021 to 11/30/2024

Status: beginning of year 1

QA needs: On-site audit during study and off-site audit of the final report

RFA E20-2, “Community Exposures Associated with Unconventional Oil and Natural Gas Development: Water Quality”

RFA E20-2 solicits applications for research that uses existing data to determine the UOGD processes that have resulted or might result in releases to groundwater or surface water, and potential for leading to human exposure. The research aims to quantify the magnitude, frequency, and duration of potential exposures to chemicals in surface water or groundwater released from specific UOGD processes and distinguish potential UOGD exposures from other sources. The data will be made publicly available at the end of the study period.

Study #4: Using Geoscientific Analysis and Community Engagement to Analyze Exposures to Potential Groundwater Contamination Related to Hydrocarbon Extraction in Southwestern Pennsylvania

The objective of this study is to evaluate potential linkages between UOGD and groundwater contamination in a tri-county region of Pennsylvania. The investigators will apply the following methods to achieve their goals: 1) combine an existing data set of chemical measurements in groundwater with machine learning to isolate the influences of natural and anthropogenic processes on groundwater chemistry and to identify chemical signatures of UOGD, 2) evaluate linkages between UOGD and potential water contamination, and 3) map locations of potential contamination from UOGD activities.

Location: Pennsylvania

Duration: 1.5 years

Start date and anticipated end date: 1/1/2022 to 6/30/2023

Status: beginning of year 1

QA needs: Off-site audit of the final report

Study #5: Using Geoscientific Analysis and Community Engagement to Analyze Exposures to Potential Groundwater Contamination Related to Hydrocarbon Extraction in Southwestern Pennsylvania

The objective of this study is to evaluate whether instances of community water supply contamination in Colorado and New Mexico might be the result of UOGD. The investigators will apply the following methods to achieve their objectives: 1) analyze existing groundwater and surface water quality data for community water supplies near UOGD and examine correlations between water quality and oil and gas operational data, 2) examine temporal and spatial correlations between UOGD and community water supply contamination to identify possible exposure pathways. 3) model contaminant transport along possible exposure pathways to evaluate the feasibility of the pathways connecting community water supplies with UOGD.

Location: Colorado and New Mexico

Duration: 1 year

Start date and anticipated end date: 2/1/2022 to 1/31/2023

Status: beginning of year 1

QA needs: Off-site audit of the final report

APPLICATION PROCESS

The application process consists of 2 phases:

1. Statement of qualifications (Phase 1)
2. Proposal for auditing HEI Energy-funded research studies (Phase 2)

INSTRUCTIONS FOR PREPARING THE APPLICATION

Interested teams may apply for QA oversight of one or multiple studies.

Statement of Qualifications (Phase 1)

Interested applicants should submit a statement of qualification using Form 1. The Statement should include the following: a) statement of qualifications that includes a list of QA projects completed during the last five years that are relevant to the HEI Energy studies, b) curriculum vitae of the key personnel who would conduct the QA oversight, c) specific studies that the applicant is interested in auditing, and d) list of any actual or potential collaborations between the applicant and the study investigators. The statement of qualifications is non-binding.

Required areas of team expertise for RFA E20-1 include:

- Air pollution measurement methods.
- Air pollution modeling, including experience with satellite data, local and regional dispersion models, and land-use regression modeling.
- Noise measurement collection.
- Familiarity with emissions databases.
- Statistics, including regression and machine learning techniques.

Required areas of team expertise for RFA E20-2 include:

- Geochemistry and geochemical and subsurface chemical transport models.
- Statistics, including regression and machine learning techniques.

HEI Energy will invite the most qualified applicants to submit a proposal for auditing HEI Energy-funded studies.

Deadline: April 4, 2022. Applicants will be informed if they have been selected to submit a proposal and for which studies, within 2 weeks of submitting a complete Statement of Qualifications.

Request for Proposals (Phase 2)

Selected Phase 1 applicants will be asked to submit a written proposal for QA oversight for the specific studies using Form 2. The proposal should include for each study a) proposed scope of work, b) schedule and detailed list of tasks for the audits and hours allocated to each task, c) list of personnel involved and their responsibilities, and d) budget estimate for each study with separate items for personnel costs (indicating the number of hours and the hourly rate of each member of the QA team) and travel costs, if applicable. Please note that HEI Energy does not pay for travel time; however, travel time can be billed if it is used for work related to the visit.

HEI Energy RFQP 2022 for QA oversight

HEI Energy will provide additional relevant material (e.g., project plans, progress reports) to the selected applicants.

Deadline: June 1, 2022. HEI Energy staff will review the proposals based on the quality of the QA plan, expertise of the team, and reasonableness of the proposed costs. A response to all applicants will be provided by June 29, 2022.

Please use the specific Forms 1 and 2 www.heienergy.org/sites/default/files/2022-02/statement-of-qualification-form-hei-energy.docx and www.heienergy.org/sites/default/files/2022-02/request-for-proposal-form-hei-energy.docx

Please direct all questions about the RFQP and application process to Dr. Allison Patton at apatton@healtheffects.org. Submissions should be submitted by email to energyfunding@healtheffects.org.

ATTACHMENTS

Attachment 1: HEI Energy Quality Assurance / Quality Control procedures for studies
<https://www.heienergy.org/sites/default/files/2021-10/he-energy-qa-qc-policy-92021.pdf>

Attachment 2: HEI Energy Research and Review Processes:
<https://www.heienergy.org/sites/default/files/2020-07/he-energy-research-and-review-processes-jul2020.pdf>

Attachment 3: Investigator Commitments (with information on study oversight, progress reports, and audit processes)
<https://www.heienergy.org/sites/default/files/2020-07/he-energy-investigator-commitments-jul2020.pdf>