

GHGMI Internship Biodiesel Research & Writing Project

The Greenhouse Gas Management Institute (GHGMI) is currently seeking a graduate-level student to assist with researching and drafting a 20-page *Technical Insight Paper* on biodiesel's renewable designation for stationary power applications. Reporting to GHGMI's senior program officer and working directly with a senior technical expert you will contribute supplemental research and draft an initial assessment on the carbon emissions intensity and "renewable" nature of biodiesel use for stationary electric generation and whether this generation qualifies for existing state and federal environmental attribute credits such as RECs, RINs, or carbon credits. The ideal candidate should be familiar with state and federal renewable energy policies, can work independently with minimal direction, and have strong research, analytical, and writing skills. This internship is a short-term project, estimated at 100 hours of work between June and August 2025. See below for a full description of the project and expected roles and responsibilities.

GHGMI is a U.S. non-profit organization with a mission to enable meaningful climate action by governments, corporations, and organizations by growing and supporting a global community of experts and institutions with the highest standards of professional practice in measuring, reporting, verifying, accounting for, and managing greenhouse gas emissions. Founded in 2007, the Institute has become a global leader in capacity development in applied GHG management with staff and faculty expertise from around the world. We are dedicated to creating an ever-improving professional community composed of globally recognized, highly competent, and ethical professionals that are committed to providing the foundation and leadership for climate change management.

Please send your resume/CV, along with a cover letter explaining how your qualifications are a good fit for this opportunity. Send directly to <u>keri.enright-kato@ghginstitute.org</u> with "Internship" in the subject line.

Project Background

Utility companies and their customers leverage thousands of diesel generators to provide standby backup for emergency power, routine maintenance, remote power support, and more applications. Distributed and emergency power needs could derive from weather events, storms, floods, or wildfires, with potentially unexpected locations and for undefined durations. To mitigate the impact of wildfires, utilities in California have also scheduled Public Safety Power Shutoffs (PSPS), impacting customers during severe weather situations with limited power options. Diesel generators have also served routine maintenance power outages, such as those for substations and remote power applications for essential loads. Due to air quality regulations, diesel generators are generally limited almost exclusively to emergency or remote applications and have not served other grid applications, including peak shaving or market applications.

Currently, diesel compression ignition engines are the most mature, cost-effective, and reliable technology for backup applications. However, traditional diesel engines produce higher emissions of CO₂, NO_x, particulate matter (PM), and other pollutants than alternative designs, and are inconsistent with objectives to achieve cleaner air and carbon reduction targets.

Replacement and/or refurbishment of existing diesel generators with alternative, low-carbon technologies may help reduce carbon emissions. Technology developers are currently testing a

biodiesel-fired modified diesel-style engine to understand its operational reliability, pollutant emissions, and performance characteristics. To further understand the use of biodiesel as a fuel for stationary backup generators, there is a need to understand biodiesel's potential designation as a renewable fuel and carbon emissions considerations in today's renewable fuel policy frameworks.

GHGMI has received funding to research and develop a technical report exploring issues around the application of biodiesel to this novel stationary generator. GHGMI seeks support in researching and drafting a 20-page Technical Insight Paper, "Biodiesel Fuel Renewable Designation and Carbon Considerations Report".

Project Objectives

This project will provide a preliminary policy assessment of biodiesel's renewable designation to understand if the use of biodiesel for stationary power applications meets the qualifications of statelevel Renewable Portfolio Standards (RPS), the Federal Renewable Fuel Standard (RFS), or is eligible to generate carbon credits in the voluntary carbon market. While biodiesel is considered a "renewable" fuel in many venues, no policy or regulatory action has specified that its use in stationary engines would be eligible for incentives.

The assessment will briefly summarize current scientific literature and policy or regulatory assessments of the carbon footprint of biodiesel as relevant to, the federal RFS policy and selected state RPS regulations that govern the designation of fuels as renewables in these jurisdictions. Identification of typical and atypical fuels/scenarios "count" for these designations in different jurisdictions, and what might be needed to justify the use of biodiesel in a stationary engine in a manner that allows for application to RFS and/or RPS policies. Scenarios could include a switch from fossil to biodiesel fuel in a stationary engine used for backup generation and peak shaving. "Carbon intensity" (i.e., the CO₂ emissions) across the fuel life cycle per unit of service provided, e.g., electricity produced in kgCO₂ emitted per kWh, is a metric that should be evaluated through the report. Renewable fuel policies will be considered to help assess what might be needed in terms of reporting and documentation.

The objective of this Agreement is for the intern to draft a 20-page Technical Insight Paper, "Biodiesel Fuel Renewable Designation and Carbon Considerations Report" from a GHGMI-developed annotated skeleton outline with research notes that will identify research topics and resources. Preliminary findings, guidance, assistance, review, and final edits will also be provided by GHGMI staff.

Intern Role & Responsibilities

- Supplement existing research efforts by working independently to collect information to answer the project's main research questions. (See main research questions below).
- Using existing research notes provided by GHGMI's senior technical expert and your own independent research, contribute to drafting a detailed outline answering the main research questions to inform the flow and content of the report. Review and iterate on the outline with GHGMI staff.
- Draft a 20-page report answering the main research questions that will be reviewed and edited by GHGMI's staff.
- Address and incorporate draft comments and edits to be reviewed and finalized by GHGMI staff. Note that the draft report will be reviewed by GHGMI staff and the project client.
- Address and incorporate draft comments and edits received from the project client into the development of a final report document for review by GHGMI staff.

- Meet regularly with GHGMI's staff to discuss project progress, discuss research questions, and troubleshoot any barriers identified.
- Assist in the development of a PPT presentation of the report's findings and delivering the report to the client.
- Attend calls (once or twice a month) with the project client as needed.

Main Research Questions

- Is the use of biodiesel in a stationary engine for applications such as backup generation or peak shaving (deployed behind or in front of the meter) a viable method to reduce emissions in stationary engines (compared to diesel or natural gas)? Consider both GHG and criteria
- pollutants (e.g., CO, NO_x, PM).
- Would these emissions need to be reported to a governmental emissions inventory body or are they primarily useful for corporate accounting? Would they fall under existing electric utility reporting requirements (e.g., National Emissions Inventory, Toxic Release Inventory, GHG
- Reporting Program)? If the unit owner/operator (e.g., electric power company) sells the resulting electricity to a customer, who is responsible for reporting the emissions (e.g., is this scope 1 for
- the power company and scope 2 or 3 for the customer or some other arrangement)?
- Assuming emissions are avoided if an owner uses biodiesel in a stationary engine instead of fossil-diesel, is it possible to generate renewable electricity credits (RECs), renewable
- identification numbers (RINs), or voluntary market carbon credits for this reduction? Is it technically/scientifically feasible (e.g., does the technology lower emissions compared to the most likely alternative – fossil-diesel)? Is it legally/policy feasible (e.g., is there a mechanism in place in the US at
- How does the answer change if the genset is put on a trailer for mobile use? It's not traditional "mobile" in that it won't be a vehicle moving around, but it is a portable system that can be moved in between uses for specific deployments. Is this more likely to "count" for credit
- eligibility because it is "somewhat" mobile?
- Can the biodiesel be used 100% or must it be blended?

Intern Stipend

• A stipend of \$2,500 will be provided for this project (estimated to take ~100 hours).