Good Afternoon

The Webinar is scheduled to start at 1:00 ET
Welcome to the Webinar
NETL Webinar on FECEM’s Minority Serving Institutions Program

Sarah Nathan
Federal Project Manager
Welcome and Introductions

• The objective of this Webinar is to assist officials at Minority Serving Institutions (MSIs) by
  
  o Increasing awareness of NETL’s *Historically Black Colleges and Universities, and, Other Minority Institutions (HBCU-OMI) Program* and its available opportunities
  
  o Presenting the context for these opportunities: NETL’s Mission and Priorities in general and of Crosscutting Research in particular
  
  o Reviewing NETL’s engagement with MSIs and its purpose
  
  o Briefing participants on the intricacies of doing business with the Federal Government and how to effectively respond to NETL Funding Opportunity Announcements (FOAs)
Welcome and Introductions

• This **Webinar is being recorded and will be posted** on NETL Website: [www.netl.doe.gov](http://www.netl.doe.gov). Go to the “News and Events” tab on the upper right-hand side and click “Conference Proceedings”.

• If you are using computer audio, you may experience audio issues depending on your internet connection speed. To avoid this, **we recommend the phone call option**.

• Your telephones are muted and we will not be able to hear your questions, so **please use the chat/question box that came up when you logged onto WebEx for your questions**. All questions will be answered, time-permitting, after all the presentations have been made.

• Questions that are not answered during the Webinar will be posted, along with the answers, at the same location as the Webinar recording.
Goals of NETL’s HBCU-OMI Program

• To reach U.S. minority students from underrepresented and structurally marginalized communities.

• For minority students to **benefit from and contribute to world-class research activities** by participating in key areas that impact the Nation and potentially, the World.

• For minority students to have the **opportunity to be involved in FECM mission goals for a sustainable and net-zero greenhouse gas future**.

• For minority students to **develop and hone cutting-edge and translatable skillsets**.
Agenda

1. Welcome and Introductions
   Sarah Nathan, Federal Project Manager, Crosscutting Team

2. Overview of NETL’s University Training & Research Program
   • Alan Perry, Director, Office of Workforce Management and Administration
   • Sandra Penaherrera, Program Manager, Mickey Leland Energy Fellowship Program
   • Sydni Credle, Technology Manager, University Training & Research

3. Overview of Hydrogen Program
   Hydrogen and Fuel Cell Technologies Office (HFTO)
   • Eric Miller, Senior Advisor
   • James Vickers, Technology Manager

4. Overview of internship opportunities
   • Mickey Leland Energy Fellowship Program
     Sandra Penaherrera, Program Manager, Mickey Leland Energy Fellowship Program
   • NETL’s Internship Programs
     Patricia Adkins-Coliane, Program Coordinator

5. Doing Business with the Federal Government and Funding Opportunity Announcements (FOAs)
   Sarah Nathan, Federal Project Manager, Crosscutting Team

6. Responding to the Areas of Interest (or Topics)
   Sarah Nathan, Federal Project Manager, Crosscutting Team

7. Questions and Answers
University Training and Research

2022 HBCU-OMI Spring Webinar

April 12, 2022
MISSION

Driving innovation and delivering solutions for an environmentally sustainable and prosperous energy future:

• Ensuring affordable, abundant and reliable energy that drives a robust economy and national security, while
• Developing technologies to manage carbon across the full life cycle, and
• Enabling environmental sustainability for all Americans

VISION

To be the nation’s premier energy technology laboratory, delivering integrated solutions to enable transformation to a sustainable energy future.
Research Focus by Site

Multiple Sites Operating as 1 LAB System

**OREGON**
- Materials Performance
- Multi-environment Materials Characterization
- Alloy Development/Manufacture
- Geospatial Data Analysis

**WEST VIRGINIA**
- Energy Conversion Devices
- Simulation-Based Engineering
- In-Situ Materials Characterization
- Supercomputer Infrastructure
- Diagnostics, Sensors, and Controls

**PENNSYLVANIA**
- Process Systems Engineering
- Decision Science
- Functional Materials
- Environmental Sciences
- Energy Systems Optimization

**TEXAS**
- Oil and Gas Strategic Office

**ALASKA**
- Oil and Gas Strategic Office
NETL Snapshot

By the Numbers

3 labs across U.S.
1000+ R&D projects in 50 states
$5.0B total award value
$1.2B FY22 budget

Workforce

1,344 Full Time Equivalent Employees (FTEs)
34 Joint Faculty
12 Postdoctoral Researchers
18 Graduate Students
1 Undergraduate Students

NETL manages & implements an array of activities for multifaceted R&D programs
- Program planning, development, and execution
- Legal, financial, procurement and Head of Contracting Activity (HCA)
- Project management expertise

March 2022
NETL Budget

FY2022 Budget
$1.2B

Carbon Management
- Carbon Capture $99M
- Carbon Dioxide Removal $49M
- Carbon Utilization $29M
- Carbon Storage $97M
- Adv. Energy Systems $94M
- Crosscutting Research $33M
- Mineral Sustainability $53M
- STEP $15M

Resource Sustainability
- Resource Tech. and Sustainability $110M

FECM Program Support
- Program Direction $66.8M
- Special Recruitment $1M
- NETL Research & Ops. $83M
- NETL Infrastructure $75M
- Congressionally Directed Spending $20M

Non-Fossil Programs*
- EE $260M
- OE $10M
- CESER $67M

Collaborative Research and Engagement
- Other $80M

*estimated and subject to change

Updated March 2022
U.S. DEPARTMENT OF ENERGY
Carbon Management Technology R&D Thrusts

Carbon Capture & Removal
- Negative Emissions Technologies
- Direct Air Capture
- Natural Gas Sources
- Industrial Sources
- Enhanced Weathering

Carbon Utilization & Storage
- Algae Systems
- Conversion to Fuels & Chemicals
- Mineralization into Inorganic Materials
- Monitoring, Verification, Accounting & Assessment of Long-Term Storage
- Storage Infrastructure Demonstration
- Accelerating Regional Initiatives
- CarbonSAFE

Rare Earths & Critical Minerals
- Efficient REE and CM recovery, extraction, and separation
- Cost-competitive domestic supply

Advanced Energy & Hydrogen
- Hydrogen Fuel
- 21st Century Power Plants
- Gasification
- Solid Oxide Fuel Cells & Gas Turbines

Crosscutting Research
- High-Performance Materials
- Sensors & Controls
- Energy Storage
- Simulation-Based Engineering
- University Training & Research

STEP (Supercritical CO₂)
- STEP Pilot Plant
- Turbomachinery & Recuperators
- Advanced Concepts in Direct-Fired Cycles
- Systems Integration & Operation

Credit: Carbon Utilization Photo Courtesy of MicroBio
University Training and Research Program

- **U.S. Competitiveness**
- **Early-stage R&D** in fossil energy and carbon management
- **Expanded research capabilities and facilities**
- **(HBCU/OMI)** Inclusion for Underrepresented Communities
- **Highly skilled & well-qualified workforce**

Historically Black Colleges & Universities (HBCU) and Other Minority Institutions (OMI)

University Coal Research (UCR)

Education and Training Program for Next Generation of Engineers and Scientists
UTR Program – Goals and Objectives

- To **educate and train the next generation of engineers and scientists** to help develop and contribute to a highly-skilled, inclusive, and competitive U.S. workforce and economy.

- To support **novel, early-stage research at U.S. colleges and universities** that advances the Office of Fossil Energy & Carbon Management’s mission of delivering integrated solutions related to fossil energy and carbon management and enable transformation to a sustainable, net-zero greenhouse gas future.

- To **increase research & development opportunities for underrepresented and structurally marginalized communities** within the U.S. and tap into the innovative and diverse thinking of student researchers at minority-serving institutions of higher learning.

- Ensure that students are being equipped with **cutting-edge, translatable skillsets** that will allow them to contribute to the U.S. workforce and greater economy over the course of a longstanding and enduring career.
Challenges and Opportunities for Future Energy Systems
Decarbonization Goals

• **50% reduction in U.S. GHG pollution by 2030**
  - From a 4/22/21 White House Statement: Today, President Biden will announce a new target for the United States to **achieve a 50-52 percent reduction from 2005 levels in economy-wide net greenhouse gas pollution in 2030** – building on progress to-date and by positioning American workers and industry to tackle the climate crisis.

• **Carbon-neutral power sector by 2035**
  - From EO 14008, Sec 205: "The plan shall aim to use, as appropriate and consistent with applicable law, all available procurement authorities to achieve or facilitate: (i) a carbon pollution-free electricity sector no later than 2035"

• **Carbon-neutural economy by 2050**
  - From EO 14008, Sec 201: "Despite the peril that is already evident, there is promise in the solutions — opportunities to create well-paying union jobs to build a modern and sustainable infrastructure, deliver an equitable, clean energy future, and put the United States on a path to **achieve net-zero emissions, economy-wide, by no later than 2050**."

FECM prioritizes the following three strategic directions:

• Advancing Justice, Labor, and Engagement

• Advancing Carbon Management Approaches toward Deep Decarbonization

• Advancing Technologies that lead to Sustainable Energy

Learn more here: https://www.energy.gov/fecm/strategic-vision-role-fecm-achieving-net-zero-greenhouse-gas-emissions
Nurture technologies from initial idea/concept through the various stages of development, including proof of feasibility, prototyping, field testing, etc. Comanercialization: Technology available for wide-scale market use. Demonstration: System demonstrated in operational environment. System testing: System performance confirmed at pilot-scale. Development: Technology component validated/integrated. Discovery: Concept identified/proven at laboratory-scale. UTR Program is traditionally TRL 2-5.
University Training and Research Program

Education and Training Program for Next Generation of Engineers and Scientists

- Annual HBCU-OMI Funding Opportunity Announcement (FOA)
- Nationwide, competitive solicitation each year
- Research and development (R&D) projects awarded as Grants
- Typical duration of 2-3 years
- Award size: $400-500K

Resources:  
- https://netl.doe.gov/business/solicitations
- https://www.fedconnect.net/
- https://www.grants.gov/
**FOA Summary (Recent HBCU-OMI Topics)**

**FY20**
- Quantum for Energy Systems and Technologies
- Novel Sensors and Controls for Flexible Generation
- Machine Learning for Computational Fluid Dynamics (CFD)
- Fast, Efficient, And Reliable Fossil Power with Integrated Energy Storage

**FY21**
- Energy-water nexus implications and opportunities of a hydrogen economy
- Electromagnetic energy-assisted approaches to convert fossil fuels to low-cost hydrogen
- Process and materials co-optimization for the production of blue hydrogen
- Addressing high-temperature materials supply chain challenges
- 5G wireless technologies for power generation

**FY22**
- Techno-Economic Analysis (TEA) and Lifecycle Analysis (LCA) Screening of CCS-Enabled, Waste Coal and Biomass Power Production
- Resource Development Site Assessments to Inform LCA/TEA
- Phytotechnology Development for Identification and/or Remediation of Sites Exhibiting Soil Contamination
- R&D Scoping Study and Infrastructure Self-Assessment of FECM Research Capabilities
- Biological Uptake of CO2 via Algae for Agricultural Applications
UTR Portfolio Highlights

ROBOTICS FOR NON-DESTRUCTIVE EVALUATION

WATER TREATMENT

ARSENIC & SELENIUM IN COAL FLY ASH

QUANTUM INFORMATION SCIENCES

PASSIVE WIRELESS SENSORS
UTR Program Budget History

<table>
<thead>
<tr>
<th></th>
<th>Millions ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY17</td>
<td>1.4</td>
</tr>
<tr>
<td>FY18</td>
<td>2.25</td>
</tr>
<tr>
<td>FY19</td>
<td>3.0</td>
</tr>
<tr>
<td>FY20</td>
<td>3.0</td>
</tr>
<tr>
<td>FY21</td>
<td>3.0</td>
</tr>
<tr>
<td>FY22</td>
<td>5.0</td>
</tr>
</tbody>
</table>

HBCU-OMI Program

UCR Program
UTR Program – Project Summary

42 TOTAL PROJECTS (ACTIVE)

25 UNIVERSITY COAL RESEARCH (UCR)

17 HISTORICALLY BLACK COLLEGES AND UNIVERSITIES, AND OTHER MINORITY INSTITUTIONS (HBCU-OMI)

$18.3M TOTAL AWARD VALUE (ACTIVE)
UTR Program – Project Summary

17 HISTORICALLY BLACK COLLEGES AND UNIVERSITIES, AND OTHER MINORITY INSTITUTIONS (HBCU-OMI) ACTIVE PROJECTS

$7.4M TOTAL AWARD VALUE (ACTIVE)

44 CURRENT STUDENTS AFFILIATED W/PROGRAM (as of Nov 2021)
UTR Program – Project Summary

25 UNIVERSITY COAL RESEARCH (UCR) ACTIVE PROJECTS

$10.9M TOTAL AWARD VALUE (ACTIVE)

58 CURRENT STUDENTS AFFILIATED W/PROGRAM (as of Nov 2021)
UTR Program – University Partners

- Carnegie Mellon University*
- Colorado School of Mines
- Duke University
- Florida A&M University
- Florida International University*
- Georgia Tech Research Corporation*
- Howard University
- Johns Hopkins University
- Michigan State University
- Michigan Technological University
- Morgan State University
- New Mexico State University
- North Carolina A&T University
- Ohio State University
- Ohio University
- Old Dominion University
- Pennsylvania State University
- University of California – Riverside*
- University of Maryland
- University of Massachusetts
- University of Missouri
- University of North Carolina Charlotte
- University of North Dakota
- University of North Dakota Energy and Environmental Research Center (UNDEEREC)*
- University of Texas at El Paso*
- University of Texas at San Antonio
- West Virginia University Research Corporation*

**Denotes multiple awards; Last updated: November 2021
UTR Program – University Partners (HBCU-OMI)

Historically Black Colleges and Universities, and, Other Minority Institutions

Active Projects as of October 1, 2021
- 17 Awards
- $7.36M
- 44 Students
Active Projects as of October 1, 2021
- 25 Awards
- $10.89M
- 58 Students
In Their Own Words ...

Learn more here: https://www.energy.gov/fecm/articles/their-own-words-hbcu-omi-program-student-experience

Student Highlight Series for HBCU-OMI Program

- New initiative to amplify the work and achievements of students supported by the HBCU-OMI program
- Outstanding students were nominated by PIs and received recognition by DOE/FECM
- Students shared unique perspectives about their academic journey, including how they are contributing to a sustainable, low-carbon energy future.
Internship & Fellowship Opportunities

Oak Ridge Institute for Science and Education (ORISE)

https://orise.orau.gov/

Mickey Leland Energy Fellowship (MLEF) Program

https://netl.doe.gov/education/internships/MLEF
FECM’s HBCU-OMI Program may be leveraged to support other DOE Offices seeking to 1) provide additional opportunities, and 2) foster stronger relationships with minority-serving institutions.
Thank You!

Contact:

Alan Perry
Director, Office of Workforce Management and Administration
Alan.Perry@hq.doe.gov

Sandra Penaherrera
Program Manager, University Training & Research
Sandra.Penaherrera@hq.doe.gov

Sydni Credle
Technology Manager, University Training & Research
Sydni.Credle@netl.doe.gov

VISIT US AT: www.NETL.DOE.gov

@NETL_DOE

@NETL_DOE

@NationalEnergyTechnologyLaboratory

University Training and Research
https://netl.doe.gov/coal/university-training
DOE Hydrogen Program Activities

Eric Miller, Ph.D.
Senior Advisor

James Vickers, Ph.D.
Technology Manager

Hydrogen and Fuel Cell Technologies Office (HFTO)

April 12, 2022
Hydrogen Energy Earthshot

“Hydrogen Shot”

“1 1 1”
$1 for 1 kg clean hydrogen in 1 decade

Launched June 7, 2021
Summit Aug 31-Sept 1, 2021

www.energy.gov/eere/fuelcells/hydrogen-shot
Hydrogen is one part of a broad clean-energy portfolio.

Coordinated across relevant DOE Offices – Supporting Hydrogen Shot and H2@Scale; Interagency Working Group coordinates across Agencies.
H$_2$ Program: Priority Areas Spanning Multiple DOE Offices

- Low cost, clean hydrogen
- Low cost, efficient, safe hydrogen delivery and storage
- Enable end use applications at scale for impact
- Workforce development
- Safety, codes, standards
- Environmental Justice priorities

**NEAR-TERM**

<table>
<thead>
<tr>
<th>Production</th>
<th>Delivery</th>
<th>Storage</th>
<th>Conversion</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasification of coal, biomass, and waste with carbon capture, utilization and storage (*waste coal, other waste)</td>
<td>Tube trailers (gaseous H$_2$)</td>
<td>Pressurized tanks (gaseous H$_2$)</td>
<td>Turbine combustion</td>
<td>Fuel refining</td>
</tr>
<tr>
<td>Advanced fossil and biomass reforming/conversion/pyrolysis</td>
<td>Cryogenic trucks (liquid H$_2$)</td>
<td>Cryogenic vessels (liquid H$_2$)</td>
<td>Fuel cells</td>
<td>Space applications</td>
</tr>
<tr>
<td>Electrolysis (low-temperature, high-temperature)</td>
<td>Widespread pipeline transmission and distribution</td>
<td>Geologic H$_2$ storage (e.g., caverns, depleted oil/gas reservoirs)</td>
<td>Advanced combustion</td>
<td>Blending in natural gas pipelines</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cryo-compressed</td>
<td>Next generation fuel cells</td>
<td>Distributed stationary power</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chemical H$_2$ carriers</td>
<td></td>
<td>Transportation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Distributed CHP</td>
</tr>
</tbody>
</table>

**LONGER-TERM**

<table>
<thead>
<tr>
<th>Production</th>
<th>Delivery</th>
<th>Storage</th>
<th>Conversion</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced biological/microbial conversion</td>
<td>Chemical H$_2$ carriers</td>
<td>Materials-based H$_2$ storage</td>
<td>Fuel cell/combustion hybrids</td>
<td>Utility systems</td>
</tr>
<tr>
<td>Advanced thermo/photoelectro-chemical H$_2$O splitting</td>
<td></td>
<td></td>
<td>Reversible fuel cells</td>
<td>Integrated energy systems</td>
</tr>
</tbody>
</table>

**additional priorities in:**

- Workforce development
- Safety, codes, standards
- Environmental Justice priorities
Accelerating foundational materials RD&D for energy applications

DOE’s EMN aims to accelerate foundational applied materials RD&D in tracks aligned with some of the nation’s most pressing sustainable energy challenges.

- Hydrogen Compatible Materials
- Breakthrough Hydrogen Storage Materials
- Next-Generation Electro-catalysts for Fuel Cells
- Advanced Water Splitting Materials for Hydrogen Production

Energy Materials Network (EMN) – H₂-Related Activities
ElectroCat: Electrocatalysis Consortium

Development of durable PGM-free catalysts for PEMFCs and for low-temperature electrolyzers, as low-cost alternative to PGM catalysts, addressing critical mineral challenges

- Comprising 30 world-class capabilities and expertise in:
  - Catalyst synthesis, characterization, processing, & manufacturing
  - High-throughput, combinatorial techniques
  - Advanced computational tools

Predictive Data-Driven Guidance of High-Throughput Synthesis of PGM-free Electrocatalysts

Synthesis, Processing and Manufacturing

Characterization and Synthesis

Computation, Modeling & Data Management

Core Labs

https://www.electrocat.org/
PGM-Free Catalyst Durability Accomplishment

Catalyst synthesis development leads to excellent durability after 80,000 cycles

- Fe-N-C catalysts derived from bimetallic (Fe, Zn) zeolitic imidazolate frameworks
- ‘Single-zone’ synthesis with NH₄Cl activation: one-zone synthesis followed with high-temp activation with NH₄Cl
- ‘Dual-zone’ synthesis: synthesis involving deposition from zone 1 to zone 2 with independently-controlled temperatures
H-Mat (Hydrogen Materials Compatibility) Consortium

**H-Mat Focus Areas**

- **Polymers**: Improve life of seal materials in H₂ by 50%.
- **Metals**: Increase life of storage vessels in hydrogen by 50%.
- **Pipelines**: Characterize life of metal and polymer pipe materials in hydrogen blends.
- **Cross-cut**: Support industry & academia to develop novel low-cost materials for H₂ service.

**Materials Development to Enable 50% Increase in Life of Materials in Hydrogen Environments**

Damage in materials used in fueling stations commonly due to pressure cycling in H₂.

Storage is the second most expensive component at fueling stations; commonly replaced in <5 years due to limited life in H₂.

**World-Class Materials R&D Capabilities**

- Mechanical testing in high-pressure, temperature-controlled hydrogen environments, advanced imaging, and computational modeling tools
- National laboratory expertise developed through decades of R&D that informed hydrogen codes & standards and component design
- Two online portals for metals and polymers, to enable data sharing with global community

**Collaboration between 5 national labs & teams from industry and academia**

- Partners engaged through FOAs, SBIRs, and CRADAs
- Online data portal to share information with R&D community worldwide

[https://h-mat.org/](https://h-mat.org/)
**H-Mat – Some Key Accomplishments**

### Polymers

**Identified microstructural features within Ethylene Propylene Diene Monomer materials as locations for void formation**

- Cycled polymer materials from industry partner (Takaishi Industries) in up to 90 MPa hydrogen and conducted TEM to visualize microstructure changes
- Validated phase field models of EPDM to predict void formation, and inform materials development

**Zinc Oxide Particle**

Increasing hydrogen pressure and cycles cause void formation

### Metals

**Systematic in situ testing of 9 microstructural variants of steel confirm strong correlation between strength and reduced fracture resistance**

- Conducted molecular dynamics simulations and imaging to identify features most likely to contribute to crack growth
- Simulations will inform synthesis of experimental microstructures with enhanced resistance to fatigue

[https://h-mat.org/](https://h-mat.org/)
HyMARC—
Materials-based H2 Storage Consortium

Accelerating H₂ storage materials development to enable 2x energy density

Address critical R&D gaps, leveraging advances in multiscale modeling, in situ characterization, and novel materials synthesis techniques

Develop foundational understanding of thermodynamics and kinetics of hydrogen release and uptake in all classes of storage materials

Join world-class national lab capabilities with innovative ideas from academia and industry

HyMARC by the numbers

- 130+ publications
- 11 patents
- 60+ lab scientists
- 57 postdocs
- 35 grad students
- 13 undergrads

Solicited through FOAs
20 to date at industry, universities, natl labs

Seedling projects

Expanded user facility access

https://www.hymarc.org/
HyMARC – Some Key Accomplishments

First MOF with binding energy in the 15-25 kJ/mol range (LBNL/NIST)¹
- \( V_2Cl_{2.8}(btdd) \), 21 kJ/mol – Ideal range predicted to enable RT operation
- 38% higher than cH\(_2\), 27% improvement over SOA

MH discovery using machine learning (SNL)
- ML model + MH database data dramatically reduces material discovery time
- New materials made; performance validated

Oxalates may bind > 2 H\(_2\)/metal (LBNL)
- \( \text{KY(ox)}_2 \) adsorbs 2.2 H\(_2\) per K\(^+\) at 77 K

Encapsulated and nanostructured MHs (NREL/SNL/LLNL/LBNL)
Reduction of thermodynamic & kinetic barriers in metal hydrides shown with multiple types of synthetic techniques

Thank You!

Relevant Information

Hydrogen Technologies overview, targets, and projects:
https://www.hydrogen.energy.gov/pdfs/review21/plenary7_stetson_2021_o.pdf
•  https://www.energy.gov/eere/fuelcells/doe-technical-targets-onboard-hydrogen-storage-light-duty-vehicles

Fuel Cells overview, targets, and projects:
•  https://www.hydrogen.energy.gov/pdfs/review21/plenary8_papageorgopoulos_2021_o.pdf

Hydrogen Materials overview, targets, and projects:
•  https://www.hydrogen.energy.gov/pdfs/review21/in001a_san_marchi_2021_o.pdf
•  https://www.hydrogen.energy.gov/pdfs/review21/in001b_simmons_2021_o.pdf

Hydrogen Program:
Hydrogen Shot | Department of Energy
U.S. Department of Energy Hydrogen Program Plan
H2@Scale | Department of Energy

Consortia:
https://h-mat.org/
https://www.hymarc.org/
https://www.electrocat.org/

hydrogen.energy.gov
MICKEY LELAND ENERGY FELLOWSHIP (MLEF)

- A 10-week summer research program for Science, Technology, Engineering, and Math (STEM) students

- Receive mentorship from DOE scientists and engineers

- Provide hands-on experience complementing course of study and connect theory to practice

- Increase confidence, enhance communications skills, and promote critical thinking and problem solving
ELIGIBILITY

• Be at least age 18
• Be a U.S. Citizen
• Have a minimum 2.8 GPA
• Be enrolled full-time in a STEM degree program at the Associate, Bachelor’s or Master’s level at the time of application.
• Must be a college sophomore or higher

REQUIREMENTS

• Commit for the full 10-week program
• Attend orientation and present research findings at the Technical Forum

The 2023 program application opens September 2022
MLEF PROGRAM

STIPEND*

- Undergraduate students: $650 per week
- Master’s students: $750 per week

*Some participants may be eligible to receive a housing and travel allowance.
DOE SCIENCE, TECHNOLOGY AND POLICY PROGRAM

The DOE Science, Technology and Policy Program seeks motivated students, postgraduates, and faculty to participate in projects at the forefront of the clean energy transition, helping to address the climate crisis through a one-year fellowship with FECM. The STP Program provides an opportunity for candidate to participate in technical and policy-related FECM projects.

PARTICIPANTS MUST FALL INTO ONE OF THE FOLLOWING CATEGORIES:

• **Student:** Currently enrolled undergraduate or graduate student in an accredited U.S. college, university, technical institute, or must be in an institution approved by FECM. Part-time students may be considered with sponsor approval.

• **Postgraduate:** Candidate must have received an associate’s, bachelor’s, master’s or doctorate degree.

• **Faculty:** Candidate must be full-time faculty member at an accredited U.S. college, university, technical institute, or must be at an institution approved by FECM.

CONTACT US

Sandra Peñaherrera
MLEF@hq.doe.gov
www.energy.gov/fe/mlef
NETL Internship Opportunities

Solutions for Today | Options for Tomorrow
Why choose NETL?
- Collaborate with world class researchers, scientists, and subject matter experts
- Use one-of-a-kind equipment & facilities
- Author/co-author papers, presentations & other publication materials
- Attend/present at conferences & workshops
- Connect with other professionals in your field

Where?
- Albany, Oregon
- Morgantown, West Virginia
- Pittsburgh, Pennsylvania

When?
- Applications are always accepted, and awards are made on a continuing basis
- For best results apply by February 15 for summer appointments
- One-year appointments are renewable
- Full-time and part-time opportunities are available
Professional Internship Program (PIP)
- Current undergraduate or graduate student in good standing at a regionally accredited college/university or a post-baccalaureate within 2 years of graduation
- Minimum GPA of 2.5/4.0
- At least 18 years of age at the time of the appointment

Postgraduate Research Program (PGRP)
- Have earned/about to receive master’s or doctoral degree
- Graduate who received master’s degree within the last 3 years or doctorate within the last 5 years

Faculty Research Program (FRP)
- Full-time/part-time regular permanent faculty member at an accredited college/university with a research interest in NETL’s core R&D areas
Connecting With NETL

Check Out Websites

- For NETL, Visit - [www.netl.doe.gov](http://www.netl.doe.gov) and [www.netl.doe.gov/education/internships](http://www.netl.doe.gov/education/internships)
- Search databases like Scholar.Google.com, Web of Science, and others for recent NETL publications.
- Visit [https://orise.orau.gov/netl/](https://orise.orau.gov/netl/) for programs including PIP, PGRP, and FRP

Apply to Opportunities in Zintellect Catalog (Important!)

- [https://zintellect.com/Catalog](https://zintellect.com/Catalog) Select “National Energy Technology Laboratory” in the Organizations filter to see active NETL opportunities. Select multiple opportunities if interested.
- Recent [ORISE information session on how to apply in Zintellect](https://www.orise.orau.gov/netl/).

Direct Email

- Email [internship.program@netl.doe.gov](mailto:internship.program@netl.doe.gov) your resume and provide the specifics as to what research you’re most interested in learning more about.
- Email authors affiliated with NETL on recent publications in your area(s) of interest to introduce yourself and express interest in their research. (Let them know that you’ve applied in Zintellect)
Doing Business with the Federal Government - FOA and Requirements

Sarah Nathan
Federal Project Manager, Crosscutting Team

April 12, 2022
HBCU-OMI FECM Webinar
Steps to Apply for an NETL Grant

• Identify opportunity of interest through Funding Opportunity Announcement (FOA)
  ○ Discussed in detail later in presentation

• Meet registration requirements

• Prepare and submit application
The Funding Opportunity Announcement (FOA)

• A publicly available document by which a Federal agency makes known its intentions to award discretionary grants or cooperative agreements, usually as a result of competition for funds

• May be known as program announcements, requests for applications, notices of funding availability, solicitations, or other names depending on the agency and type of program

• See recent DE-FOA-0002398
  - Funding is closed; for example use only
  - http://www.fedconnect.net/fedconnect/?doc=DE-FOA-0002398&agency=DOE
Registration/Submission Requirements

- Obtain a **Unique Entity Identifier (UEI)** ([https://fedgov.dnb.com/webform/](https://fedgov.dnb.com/webform/))
  - This has replaced the DUNS number previously used.
- Register with the **System for Award Management (SAM)** ([sam.gov/SAM](http://sam.gov/SAM))
- Register with [grants.gov](http://grants.gov)
- Register with [fedconnect.net](http://fedconnect.net)
Register with Grants.gov

- There are 3 steps to this process:
  1. The **Authorized Organizational Representative (AOR)** must register
  2. An email is sent to the **E-Business (E-Biz) POC listed in SAM**. The E-Biz POC must approve the AOR registration using their MPIN from their SAM registration
  3. AOR verifies that registration was completed at [Grants.gov](https://www.grants.gov)

- [Grants.gov](https://www.grants.gov) is where you will submit your application package

Registration Requirements: Grants.gov
Applicants must register with FedConnect (fedconnect.net) to submit questions.

- View and download announcement documents or amendments.
- Communicate with Federal representatives managing the announcement.
- Allow at least 44 days to complete entire registration process.
Questions

• Questions related to the registration process, system requirements or how an application form works must be directed to grants.gov; 1-800-518-4726; or support@grants.gov

• Questions related to the content of the announcement must be submitted to the FedConnect portal

• Must be registered with FedConnect to submit questions and view responses
Application Preparation and Submission

• Applicants must download application package, forms and instructions at grants.gov

• Applications must be submitted through grants.gov only (this will be indicated in the solicitation document)
  - Must register at Grants.gov!
  - Update SAM annually

• Applications must be submitted through grants.gov by a qualified HBCU/OMI (Minority Serving Institution) authorized representative
Accessing NETL FOAs in FedConnect

- In an internet browser, enter the FedConnect URL [fedconnect.net](http://fedconnect.net)
- On the Main Page, click on Search Public Opportunities Only
Accessing NETL FOAs in FedConnect (cont.)

- Under **Search Criteria**, select **Issuing Office**, type “National Energy Technology Lab”, and click on **Search**.

This is a list of publicly posted opportunities. To view a particular opportunity, click the hyperlink under the title. For more details on using this page, click Help.

<table>
<thead>
<tr>
<th>Title</th>
<th>Type</th>
<th>Agency</th>
<th>Issuing Office</th>
<th>Issue Date</th>
<th>Response Due Date</th>
<th>PSC / FSC</th>
<th>NDICS</th>
<th>Reference Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vacuum Induction Melting (VIM) and Casting Furnace</td>
<td>Solicitation</td>
<td>DOE - DOE</td>
<td>National Energy Technology Lab</td>
<td>11/9/2020</td>
<td>12/1/2020 04:00 PM US/Eastern</td>
<td>4430</td>
<td>513964</td>
<td>DE-FOA-000315</td>
</tr>
<tr>
<td>Notice of Intent to Sole Source to FEI Houston Company for FEI PerGeos 1.0 soft</td>
<td>Special Notice</td>
<td>DOE - DOE</td>
<td>National Energy Technology Lab</td>
<td>11/24/2020 1:27:09 PM</td>
<td>11/23/2020 12:00 PM US/Eastern</td>
<td>7A20</td>
<td>511210</td>
<td>DE-FOA-000306</td>
</tr>
<tr>
<td>Notice of Intent to Sole Source to EPRI Technology</td>
<td>Special Notice</td>
<td>DOE - DOE</td>
<td>National Energy Technology Lab</td>
<td>11/20/2020 11:17:26 PM</td>
<td></td>
<td>R415</td>
<td>541690</td>
<td>DE-FOA-000336</td>
</tr>
<tr>
<td>Emerging CO2 Storage Technologies; Optimizing Performance Through Minimization of Seismicity Risks and Monitoring Caprock Integrity</td>
<td>Funding Opportunity</td>
<td>DOE - DOE</td>
<td>National Energy Technology Lab</td>
<td>11/10/2020</td>
<td>12/11/2020 08:00 PM US/Eastern</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notice of Intent to Issue DE-FOA-000242 to Design, R&amp;D, Validation, and Fabrication of a Prototype Carbon-Based Building</td>
<td>Funding Opportunity</td>
<td>DOE - DOE</td>
<td>National Energy Technology Lab</td>
<td>11/12/2020</td>
<td>12/7/2020 08:00 PM US/Eastern</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Broughton Volunteer Fire Department (BVFD) Services</td>
<td>Special Notice</td>
<td>DOE - DOE</td>
<td>National Energy Technology Lab</td>
<td>11/10/2020 11:56:01 AM</td>
<td>11/26/2020 05:00 PM US/Eastern</td>
<td>J012</td>
<td>922160</td>
<td>DE-FOA-000242</td>
</tr>
<tr>
<td>Notice of Intent to Issue a Funding Opportunity Announcement (FOA) on behalf of DOE’s Office of Fossil Energy (FE) entitled “Water Management For Thermal Power Generation”</td>
<td>Funding Opportunity</td>
<td>DOE - DOE</td>
<td>National Energy Technology Lab</td>
<td>10/30/2020</td>
<td>12/15/2020 08:00 PM US/Eastern</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bottled Water and Dispenser Service for NETL</td>
<td>Solicitation</td>
<td>DOE - DOE</td>
<td>National Energy Technology Lab</td>
<td>10/9/2020</td>
<td>10/23/2020 02:00 AM US/Eastern</td>
<td>8298</td>
<td>454390</td>
<td>DE-FOA-000315</td>
</tr>
<tr>
<td>Research Needs Related to Enhanced Weathering as a Mechanism for Carbon Dioxide Removal</td>
<td>Funding Opportunity</td>
<td>DOE - DOE</td>
<td>National Energy Technology Lab</td>
<td>10/14/2020</td>
<td>11/8/2020 08:00 PM US/Eastern</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4/12/2022
- Click the **hyperlink** under the title to view

### FedConnect

#### public opportunities

This is a list of publicly posted opportunities. To view a particular opportunity, click the hyperlink under the title. For more details on using this page, click Help.

<table>
<thead>
<tr>
<th>Title</th>
<th>Type</th>
<th>Agency</th>
<th>Issue Office</th>
<th>Issue Date</th>
<th>Response Due Date</th>
<th>PSC / FSC</th>
<th>NAICS</th>
<th>Reference Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchase of MI5-400 Assy, RP Consistometer M15-40</td>
<td>Special Notice</td>
<td>DOE - DOE</td>
<td>National Energy Technology Lab</td>
<td>11/7/2019 10:05:42 AM</td>
<td>11/15/2019 12:00:00 PM US/Eastern</td>
<td>6635</td>
<td>811310</td>
<td>89243320RFE000029</td>
</tr>
<tr>
<td>Notice of Intent to Sole Source to FEL Houston 8500</td>
<td>Special Notice</td>
<td>DOE - DOE</td>
<td>National Energy Technology Lab</td>
<td>11/4/2019 11:02:25 AM</td>
<td>11/15/2019 12:00:00 PM US/Eastern</td>
<td>7030</td>
<td>334516</td>
<td>89243320QFE000146</td>
</tr>
<tr>
<td>RFL Energy Storage for Fossil Fuel Energy Systems</td>
<td>Funding Opportunity</td>
<td>DOE - DOE</td>
<td>National Energy Technology Lab</td>
<td>10/30/2019</td>
<td>12/16/2019 08:00:00 PM US/Eastern</td>
<td></td>
<td></td>
<td>DE-FOA-0002209</td>
</tr>
<tr>
<td>Security Support Services for the Office of the As</td>
<td>Sources Sought</td>
<td>DOE - DOE</td>
<td>National Energy Technology Lab</td>
<td>10/25/2019 8:20:52 AM</td>
<td>11/22/2019 08:00:00 PM US/Eastern</td>
<td>R430</td>
<td>561612</td>
<td>89243320NAU000002</td>
</tr>
<tr>
<td>Revised Sources Sought Critical Minerals Market Air</td>
<td>Pre-solicitation Notice</td>
<td>DOE - DOE</td>
<td>National Energy Technology Lab</td>
<td>10/18/2019 2:45:14 PM</td>
<td>11/15/2019 02:00:00 PM US/Eastern</td>
<td>R425</td>
<td>541720</td>
<td>89243320NFE000030</td>
</tr>
</tbody>
</table>
Accessing NETL FOAs in FedConnect (cont.)

- Click on the **FOA Reference Number** under **Funding Opportunity** to view the FOA instructions
- To view Amendments to the FOA, click on the **FOA Reference Number** under Amendment 1
Accessing NETL FOAs in FedConnect (cont.)

- **Help** buttons are available on each page to assist you navigate FedConnect.
  
  - To submit questions about this FOA or submit an application, Registered Users click on **Sign In**.
  
  - Click on **Register Now** to receive notifications and agency alerts, and view the message center.
Opportunities for Work with NETL

- NETL Research Programs use the websites below to post solicitations/funding opportunity announcements, receive proposals/applications, and disseminate other information for competitive awards. **Entities wishing to participate in these solicitations must register at these websites.**
  - Fedconnect: [https://www.fedconnect.net/](https://www.fedconnect.net/)
  - Grants.gov: [https://grants.gov/](https://grants.gov/)
- Proposals will only be accepted through **Grants.gov only** (this will be indicated in the solicitation document).
- Additional information can also be found at NETL Business website: [https://netl.doe.gov/business/solicitations](https://netl.doe.gov/business/solicitations)
- An email listserve of FECM announcements can be signed up for: [https://public.govdelivery.com/accounts/USDOEOFE/subscriber/new](https://public.govdelivery.com/accounts/USDOEOFE/subscriber/new)
Historically Black Colleges & Universities and Other Minority Institutions Announcement - The FOA and Application

Sarah Nathan
Federal Project Manager, Crosscutting Team
General Information

Where to start?

• A typical Funding Opportunity Announcement (FOA) follows a standard format.

• The Funding Opportunity contains 8 main sections (with multiple sub-sections) laid out in the table of contents and focusing on the complete life cycle of the opportunity.

• It is important to familiarize yourself with the entire FOA and **pay close attention to this section to avoid submitting a “technically” non-responsive application.**
I. Funding Opportunity Description

Where to start?

Noteworthy Items

• ii. Background/Description
  • Provides information on what technology programs are funding the solicitation and introduction to the purpose of the announcement.

• iii. Objectives/Area of Interests
  • Provides important information on the technological objectives and research being sought, as well as the description of the Areas of Interest (AOIs).
  • You will be applying to a specific AOI and understanding the FOA requirements for that AOI is critical to crafting a responsive application. (Will be discussed in detail in upcoming presentation)

• iv. Applications Specifically Not of Interest
  • Pay close attention to this section to avoid submitting a non-responsive application.
II. Award Information

Where to start?

Noteworthy Items

• C. Award Overview

  I. Estimated Funding, Number of Awards, Anticipated Award Size, and Maximum DOE Share

  o Details anticipated number of awards, anticipated size (in funding) of each award, and maximum amount in funding that DOE will contribute for any one award.

  II. Estimated Period of Performance per Area of Interest

  o Includes the anticipated period of performance for projects awarded under each Area of Interest of the FOA.
III. Eligibility Information

Where to start?

Noteworthy Items

• B. Eligible Applicants
  • Will specify whether HBCU-OMI eligible applicants will be funded under awards
    • Other types of sub-recipients are permitted
  • FFRDC & National Labs are permitted to apply as subrecipients but not as a prime
    • National Labs are typically fully funded at project start. Please keep this in mind when creating budgets for the full project period.

• C. Cost Sharing
  I. Cost Share Requirements
    o Will detail the required cost share for Applicants. Typically, HBCU-OMI FOAs do not require cost share, but it is allowable
  • D&E. Compliance Criteria, and Responsiveness Criteria
    o These sections will detail what is considered compliant, and responsive, to the FOA. Only compliant and responsive applicants will be eligible to review.

Make sure to read EACH section for compliance purposes.
IV. Application and Submission Information

Where to start?

Noteworthy Items

• **A. Form and Content Requirements**
  - Applicants will have to meet each of the specified form requirements under this section

• **B. Full Applications**
  ii. **Content and Form of Full Application**
    - Will detail the documents required in the Application.
IV. Application and Submission Information

Application Files

- The SF 424 online form is the principal form for submitting an application.
- This form contains all of the basic information regarding your organization and your proposed project (project title, costs, etc.).
- Please make sure this form is filled out as completely as possible.
- Some areas of the form may not apply to your organization.

- Form to indicate the primary site where the work will be performed.
  - If a portion of the project will be performed at any other site(s), identify the site location(s) in the blocks provided.
  - Note that the Project/Performance Site Congressional District is entered using a 2-digit state code followed by a dash and a 3-digit Congressional district code. For example “VA-001”

- In this document, please state how your educational entity claims HBCU/OMI eligibility and provide a copy of that certification.
IV. Application and Submission Information

Project Narrative

-- The project narrative is the core item in the application package, where the concept, technology background, research plan, and potential improvement to the state of the art are presented.

Project Narratives Can Include:

-- Project Objectives
-- Merit Review Criterion Discussion
-- Relevance and Outcomes/Impacts
-- Roles & Responsibilities of Participants
-- Decision-making and Communication Strategy
-- Management Capabilities
-- Multiple Principal Investigators
-- Facilities And Other Resources
-- Equipment
-- Bibliography And References
-- Statement of Project Objectives (SOPO)

Pay close attention to formatting requirements:

-- The Project Narrative File must be submitted in Adobe PDF format.

-- For example: the project narrative must not exceed twenty-five (25) pages, including footnotes/endnotes, charts, graphs, maps, photographs, and other pictorial presentations, when printed using standard 8.5" by 11" paper with 1-inch margins (top, bottom, left, and right) double spaced.

-- Cover Page, Table of Contents, Bibliography and References, Current and Pending Support, and Identification of Potential Conflicts of Interest or Bias in Selection of Reviewers sections are NOT included in the Project Narrative page limitation. The font must be Times New Roman typeface, a black font color, and a font size of 11-point or larger (except in figures or tables, which may be 10-point font).

-- Applicants tend to repeat themselves within an application. Please note that each file is a stand-alone document. Do not refer to another document within the current one.
## IV. Application and Submission Information

### Project Narrative Sections

<table>
<thead>
<tr>
<th>Narrative Section</th>
<th>Intent/Helpful Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PROJECT OBJECTIVES</strong></td>
<td>Should provide a clear, concise statement of the specific objectives/aims of the proposed project</td>
</tr>
<tr>
<td><strong>MRC DISCUSSION</strong></td>
<td>Applications are evaluated and scored in accordance with the merit review criteria and weights provided in the FOA</td>
</tr>
<tr>
<td><strong>RELEVANCE &amp; OUTCOMES/IMPACTS</strong></td>
<td>Justification for the proposed project should include a clear statement of the importance in terms of the utility of the outcomes and the target community of beneficiaries</td>
</tr>
<tr>
<td><strong>ROLES &amp; RESPONSIBILITIES OF PARTICIPANTS</strong></td>
<td>Describe the roles and the work to be performed by each participant/investigator, business agreements between the applicant and participants, and how the various efforts will be integrated and managed</td>
</tr>
<tr>
<td><strong>DECISION-MAKING AND COMMUNICATION STRATEGY</strong></td>
<td>Emphasis on scientific/technical direction and mechanisms for controlling project scope, cost, and schedule.</td>
</tr>
<tr>
<td><strong>MANAGEMENT CAPABILITIES</strong></td>
<td>Provide information relevant to the capabilities and experience of the PI and project team in managing technical projects of similar nature and complexity.</td>
</tr>
<tr>
<td><strong>FACILITIES &amp; OTHER RESOURCES</strong></td>
<td>If appropriate, indicate their capacities, pertinent capabilities, relative proximity, and extent of availability to the project</td>
</tr>
<tr>
<td><strong>EQUIPMENT</strong></td>
<td>If you are proposing to acquire equipment, describe comparable equipment, if any, already at your organization and explain why it cannot be used</td>
</tr>
<tr>
<td><strong>BIBLIOGRAPHY &amp; REFERENCES</strong></td>
<td>This section is not typically included in the page limitation of the project narrative</td>
</tr>
<tr>
<td><strong>STATEMENT OF PROJECT OBJECTIVES (SOPO)</strong></td>
<td>The SOPO should contain a clear, concise description of all activities to be completed during project performance and follow the structure discussed below</td>
</tr>
</tbody>
</table>
IV. Application and Submission Information

Application Files

- SF-424
- Project/Performance Site Location(s)
- Summary for Public Release
- Project Narrative
- Project Management Plan
- Resume
- SF424A Budget Justification
- Budget Justification
- Environmental Questionnaire
- HBCU/OMI-Eligible Document, if applicable

- A key item to remember with the Project Summary file is that it can be publicly distributed, do not include ANY proprietary or business sensitive information.
- Self-contained, one (1) page document
- Identifies: name of the applicant; project director/principal investigator(s); project title; objectives of the project; description of the project; methods to be employed; potential impact (i.e., benefits, outcomes); major participants

- This plan typically includes the following sections:
  - Executive Summary
  - Risk Management
  - Milestone Log
  - Funding and Costing Profile
  - Project Timeline
  - Success Criteria at Decision Points

PMP is generally 6-8 pages when printed using standard 8.5” by 11” paper with 1” margins (top, bottom, left and right) single-spaced with font no smaller than 11-point.

- Environmental questionnaire for each geographic site where project activities will take place must be completed
- The form is located at https://www.netl.doe.gov/sites/default/files/2018-02/451_1-1-3_0.pdf

4/12/2022
IV. Application and Submission Information

Application Files

SF-424

PROJECT / PERFORMANCE SITE LOCATION(S)

PROJECT NARRATIVE

SUMMARY FOR PUBLIC RELEASE

PROJECT MANAGEMENT PLAN

RESUME

SF424A BUDGET JUSTIFICATION

BUDGET JUSTIFICATION

ENVIRONMENTAL QUESTIONNAIRE

HBCU/OMI-ELIGIBLE DOCUMENT, IF APPLICABLE

— Each key person proposed on the project, including sub-awardees and consultants, need to submit a 2-page resume with the application.

— A key person is any individual who contributes in a substantive, measurable way to the execution of the project.

— This document should highlight education and training, professional experiences, publications (you may list up to 10 and they should be those that are most closely related to the proposed project), patents/copyrights/software systems developed, and synergistic activities (no more than 5). All resumes should be compiled into a single file.

— Each resume should not exceed 2 pages including (if applicable):
  - Education and Training: provide institution, major/area, degree, and year (Undergraduate, graduate, and postdoctoral training)
  - Professional Experience: Beginning with the current position, list in chronological order, include brief description of professional/academic positions
  - Publications: Provide a list of up to 10 publications most closely related to the proposed project. For each publication, identify the names of all authors (in the same sequence in which they appear in the publication), the article title, book or journal title, volume number, page numbers, year of publication, and website address (if available).
    - Patents, copyrights, and software systems developed may be provided in addition to or substituted for publications
  - Synergistic Activities: List no more than 5 professional and scholarly activities related to the effort proposed
IV. Application and Submission Information

Application Files

- SF-424
- PROJECT / PERFORMANCE SITE LOCATION(S)
- PROJECT NARRATIVE
- SUMMARY FOR PUBLIC RELEASE
- PROJECT MANAGEMENT PLAN
- RESUME
- SF424A BUDGET JUSTIFICATION
- BUDGET JUSTIFICATION
- ENVIRONMENTAL QUESTIONNAIRE
- HBCU/OMI-ELIGIBLE DOCUMENT, IF APPLICABLE

- A separate budget for each year of support requested and a cumulative budget for the total project period are usually required.


- Justify the costs proposed in each Object Class Category/Cost Classification category.

- For example:
  - Identify key persons and personnel categories and the estimated costs for each person or category
  - Provide a list and cost of equipment
  - Identify proposed subaward/consultant work and cost of each subaward/consultant
  - Describe purpose of proposed travel, number of travelers, and number of travel days
  - List general categories of supplies and cost for each category

Please note that if you are selected for award, you may be asked to break down these sections into more specific charges.

4/12/2022
V. Application Review Information

Where to start?

TABLE OF CONTENTS

A. REVIEW CRITERIA
   i. COMPLIANCE/RESPONSIVENESS REVIEW
   ii. FULL APPLICATION MERIT REVIEW CRITERIA

B. OTHER SELECTION FACTORS
   i. PROGRAM POLICY FACTORS

C. OTHER REVIEW REQUIREMENTS
   i. RISK ASSESSMENT
   ii. REPORTING MATTERS RELATED TO RECIPIENT INTEGRITY AND PERFORMANCE

D. REVIEW AND SELECTION PROCESS
   i. MERIT REVIEW
   ii. SELECTION
   iii. DISCUSSIONS AND AWARD

Noteworthy Items

• A. Review Criteria
  ii. Full Application Merit Review Criteria

  o This section will detail the merit review criteria that the application will be judged by. Each merit review criteria should be addressed via information within the application
Additional Sections (VI, VII, VIII, & IX)

- **VI Award Administration Notice** - Provides information on DOE’s award administration processes

- **VII Questions/Agency Contacts** – Provides information on where to submit questions and lists appropriate agency contacts

- **VIII Other Information** – Provides information on additional requirements and templates

- **IX Appendices** – Provides important templates to follow while developing your application
Responding to Areas of Interest (AOIs)

Sarah Nathan
Project Manager, Crosscutting Team

April 12, 2022
HBCU-OMI FECM Webinar
## Areas of Interest

The FOA provides background materials regarding the topics often called “Areas of Interest” (AOIs)

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe in detail each area of research where NETL is seeking proposals</td>
</tr>
<tr>
<td>Should be carefully considered as a potential topic for research proposals</td>
</tr>
<tr>
<td>Number/types of areas of interest are dependent on funding in particular areas, DOE mission goals, and technology maturity</td>
</tr>
<tr>
<td>Areas of Interest change annually</td>
</tr>
<tr>
<td>May also include descriptions of research that are NOT being sought in the FOA</td>
</tr>
</tbody>
</table>

4/12/2022
## Previous Areas of Interest

### FY 2021
- **AOI 1A**: Energy-Water Nexus Implications and Opportunities of a Hydrogen Economy
- **AOI 1B**: Electromagnetic Energy-Assisted Approaches to Convert Fossil Fuels to Low Cost Hydrogen
- **AOI 1C**: Process and Materials Co-Optimization for the Production of Blue Hydrogen
- **AOI 2**: Addressing High-Temperature Materials Supply Chain Challenges
- **AOI 3**: 5G for Coal-Fired Power Generation

### FY 2020
- **AOI 1**: Quantum for Energy Systems and Technologies
- **AOI 2**: Novel Sensors and Controls for Flexible Generation
- **AOI 3**: Machine Learning for Computational Fluid Dynamics
- **AOI 4**: Fast, Efficient, And Reliable Fossil Power with Integrated Energy Storage

### FY 2019
- **AOI 1**: Application of Novel Analytic Method(s) to Determine Arsenic and/or Selenium Concentrations in Fly Ash Waste Streams Generated from Coal Combustion
- **AOI 2**: Cybersecure Sensors for Fossil Power Generation
- **AOI 3**: Modeling Existing Coal Plant Challenges using High Performance Computing
- **AOI 4**: Coal Plant Effluent Water Reuse

---

**4/12/2022**
Responding to FOAs

Read the FOA Carefully

- Understand the Background/Description
- Understand the specific Objectives
- Understand the topics NETL is interested in funding

Read AOI Language Closely

- Understand where your research strengths best fit with NETL AOIs
- Look for specific thresholds or requirements
- Determine items that are not of interest within that topic area/area of interest

Recycling Applications is Generally NOT a Successful Approach
DOE seeks innovation in the use of alternative energy processes including microwave, radio frequency (RF), plasma, and other electromagnetic inputs for low cost hydrogen production from fossil fuels. Projects can be experimental, computational, or, a combination of the two. Experimental based studies should be focused on the development of an efficient catalyst material that interacts with electromagnetic fields with high single pass conversion of hydrocarbons with high selectivity to hydrogen. Studies can include combining reactions and separations steps within the same alternative energy system. The experimental projects should also include energy efficiency calculations of their process and comparison to traditional thermal methods. Economic advantages of an alternative energy are not exclusive to the chemical reaction, but can also include downstream energy gains and process simplifications from higher reaction selectivity.

Success metrics are (1) supporting technology transfer by publishing project work within a journal or conference proceeding, (2) demonstrating quantum chemistry techniques for hydrogen generation using an alternative energy source, and (3) demonstrating use of alternative energy for hydrogen generation with projected low costs.
Responding to FOAs

Get Organized Early

• Create a Proposal Team
• Identify key research team members
• Consider teaming with other institutions
  o Provide letters of support
  o Financial investment if applicable
  o Be as specific as possible
• Develop an Application Preparation Schedule and Key Submittal Dates

Ask Questions

• Use FedConnect to ask questions while FOA is open
  o Can be used for technical, administrative, or FOA clarification (differences between milestones, success criteria, deliverables, etc.)
• See if your questions have already been asked/answered on the server
Identify Required Submittals

- SF-424, Narrative, Abstract, Project Management Plan, Budget Justifications etc.
- Address ALL Areas
  - Follow the review criteria and ensure that all aspects are clearly addressed by your application

Submit All Documentation

- Ensure that all required documentation is submitted
- **Failure to do so can result in a non-responsive application**
- Ensure Page limits, margins, spacing, font size (all specified within the FOA)
- Ensure cohesiveness and consistency between documentation (budgets, narrative, SOPO, PMP, etc.)

Verify that the final application complies with ALL FOA requirements
Questions?

VISIT US AT: www.NETL.DOE.gov

@NETL_DOE

@NETL_DOE

@NationalEnergyTechnologyLaboratory

CONTACT:

Sarah Nathan, Ph.D.
Project Manager, Cross Cutting Team
412-386-9215
sarah.nathan@netl.doe.gov

Sydni Credle, Ph.D., P.E.
Technology Manager, University Training and Research
304-285-5255
sydni.credle@netl.doe.gov
Thank you for attending the 2022 Spring HBCU-OMI FECM Webinar

Any Questions?

Solutions for Today | Options for Tomorrow
This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.