## **Good Afternoon**

The Webinar is scheduled to start at 2:00 ET



Solutions for Today | Options for Tomorrow



## Welcome to the Webinar

## NETL Webinar on FECM's University Training

Research Program



**Sarah Nathan** Federal Project Manager



#### Welcome and Introductions



- The objective of this Webinar is to assist officials at Universities by
  - Increasing awareness of NETL's University Training and Research Program and its available opportunities
  - Presenting the context for these opportunities: NETL's Mission and Priorities in general and of Crosscutting Research in particular
  - Reviewing NETL's engagement with universities and its purpose
  - 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:
   <a href="https://www.netl.doe.gov">www.netl.doe.gov</a>. 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.



#### **Agenda**



- Welcome and Introductions
  Sarah Nathan, Federal Project Manager,
  Integrated Carbon Management 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
- Overview of Mickey Leland Energy Fellowship Program
  - Sandra Penaherrera, Program Manager, Mickey Leland Energy Fellowship Program

- 4. Overview of the HDSTEM Initiative Alan Perry, Director, Workforce Management, FECM
- 5. Doing Business with the Federal Government and Funding Opportunity Announcements (FOAs) Maureen Davison, Grants Management Specialist, Financial Assistance
- 6. Responding to the Areas of Interest (or Topics)
  Heather Hunter, Federal Project Manager,
  Integrated Carbon Management Team
- 7. Questions and Answers



## University Training and Research

2022 HBCU-OMI Summer Webinar







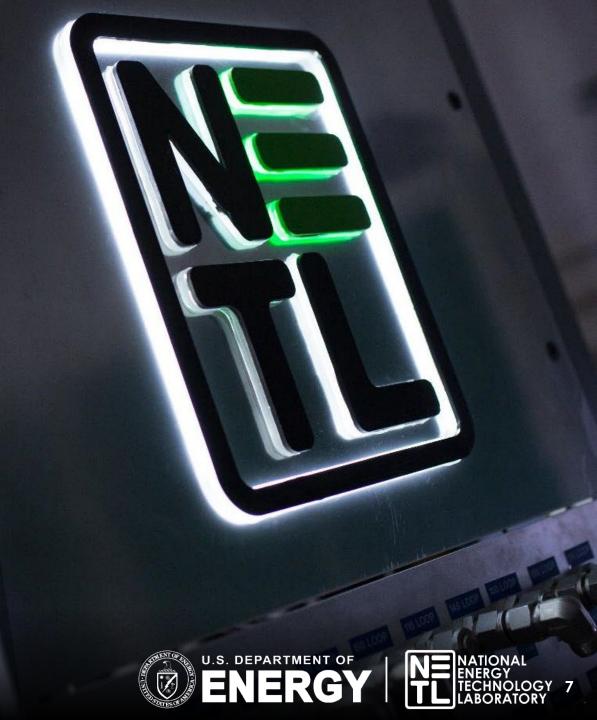
#### MISSION

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**

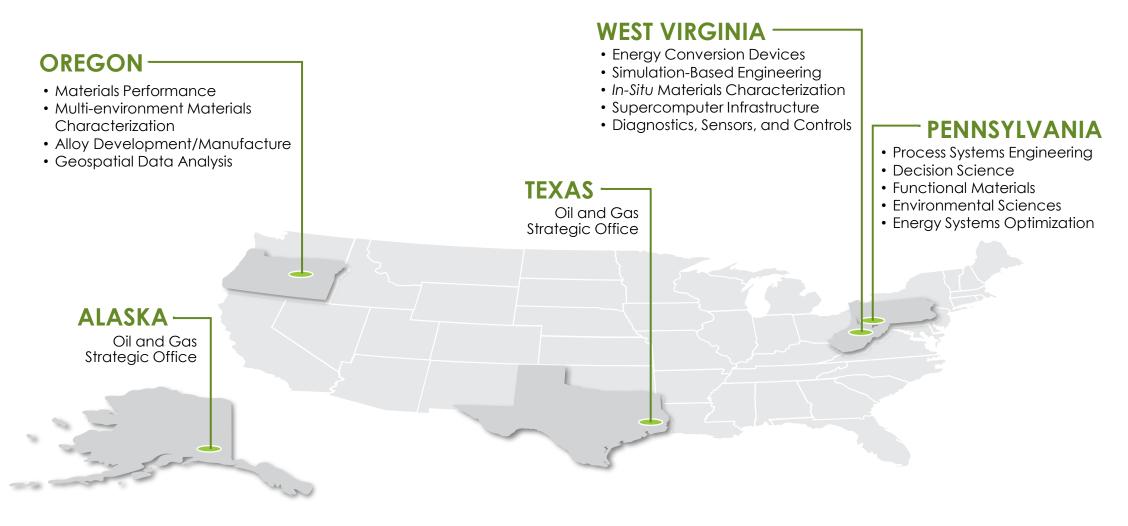
To be the nation's premier energy technology laboratory, delivering integrated solutions to enable transformation to a sustainable energy future.



#### Research Focus by Site

#### Multiple Sites Operating as 1 LAB System





#### 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

Graduate Students

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



#### 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 \$110M Sustainability

#### **FECM Program Support**

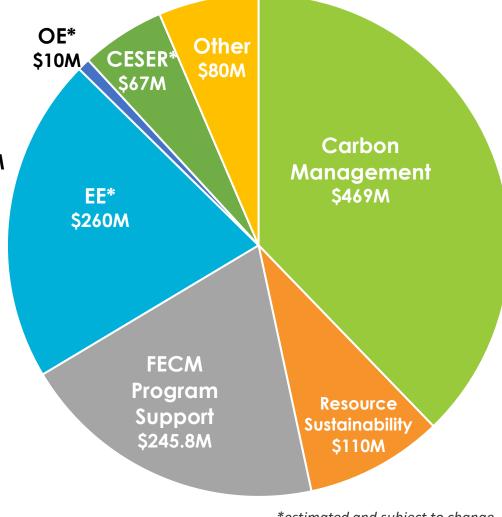
Program Direction	\$ 66.8M
Special Recruitment	\$ 1M
NETL Research & Ops.	\$ 83M
NETL Infrastructure	\$ 75M
Congressionally Directed	\$ 20M
Spending	

#### Non-Fossil Programs\*

EE	\$260M
OE	\$ 10M
CESER	\$ 67M

#### Collaborative Research and Engagement

Other \$ 80M



\*estimated and subject to change

**NATIONAL** 

**TECHNOLOGY** 



## Carbon Management Technology R&D Thrusts



#### **Carbon Capture & Removal**

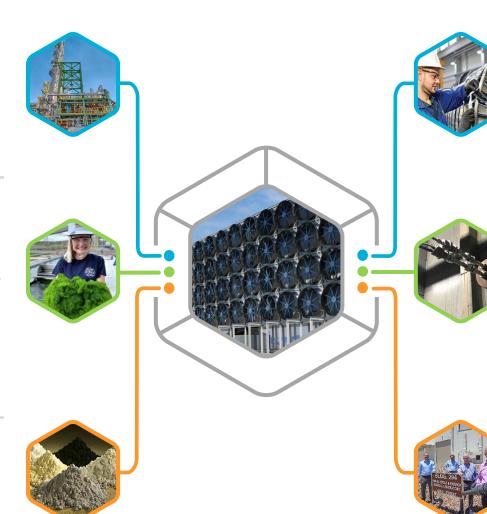
- Negative Emissions Technologies
- Direct Air Capture
- Natural Gas Sources
- Industrial Sources
- Enhanced Weathering

#### 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 CO<sub>2</sub>)

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







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"

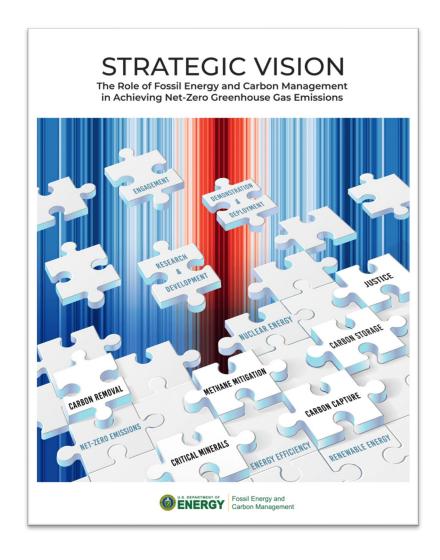
#### Carbon-neutural economy by 2050

• 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."



#### 2022 FECM Strategic Vision





## Strategic Vision: The Role of FECM in Achieving Net-Zero Greenhouse Gas Emissions

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



#### 2022 FECM Strategic Vision



## POINT SOURCE CAPTURE

Reduce cost, increase efficacy and advance deployment of commercial-scale PSC technologies

## CARBON DIOXIDE CONVERSION

Accelerate capabilities for large-scale conversion of CO<sub>2</sub> into products

## CARBON DIOXIDE REMOVAL

Invest in diverse set of CDR approaches to realize costs below \$100/net metric ton of CO<sub>2</sub>e

## RELIABLE CO<sub>2</sub> STORAGE

Establish foundation for a successful carbon transport and storage industry

## HYDROGEN PRODUCTION

Invest in H2 production coupled with CCS using sustainably-sourced carbon-based feedstocks





Nurture technologies from initial idea/concept through the various stages of development, including proof of feasibility, prototyping, field testing, etc.

#### COMMERCIALIZATION

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

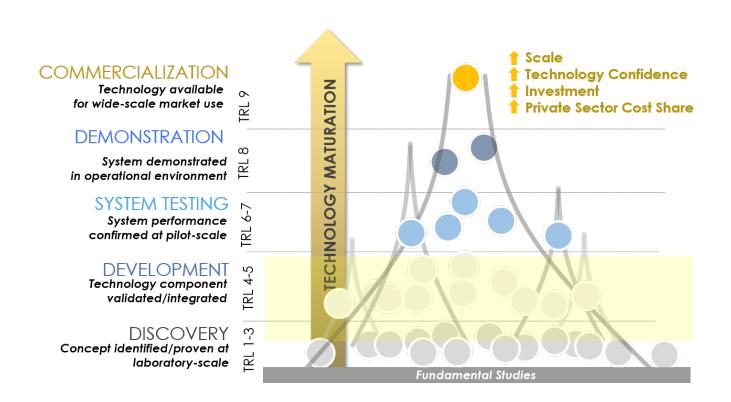
Concept identified/proven at laboratory-scale

Scale **Technology Confidence** MATURATION Investment **Private Sector Cost Share** *IECHNOLOGY* Fundamental Studies

UTR Program is traditionally TRL 2-5







- Use applied R&D as the vehicle for student training and education
- UTR Program is TRL 2-5 (early-stage research)
  - Emphasis on TRL 2-3, which includes proof of feasibility and laboratory-scale demonstration
- Opportunity to explore transformational and disruptive research topics
- Research outcomes help inform NETL/FECM strategy and investments





Education and Training Program for Next Generation of Engineers and Scientists

- Annual Multi-year Funding Opportunity Announcements (FOAs)
- Nationwide, competitive solicitation
- Research and development (R&D) projects awarded as Grants
- Typical duration of 2-3 years
- Award size: \$400-500K; Varies based on AOI
- Resources: <a href="https://netl.doe.gov/business/solicitations">https://netl.doe.gov/business/solicitations</a>

https://www.fedconnect.net/

https://www.grants.gov/



## FOA Summary (Recent UTR Topics)







**FY22\***\*2022 - present

- 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

- 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 cooptimization for the production of blue hydrogen
- Addressing high-temperature materials supply chain challenges
- 5G wireless technologies for power generation

- 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

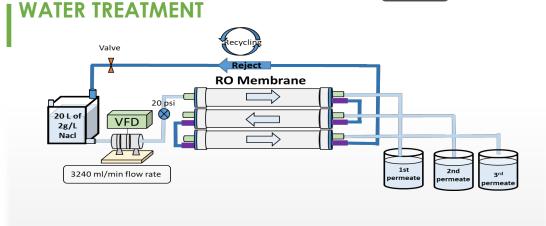


## UTR Portfolio Highlights

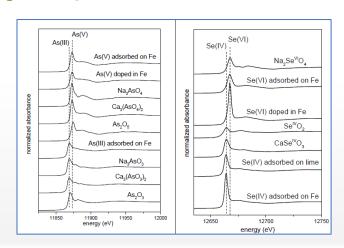


ROBOTICS FOR NON-DESTRUCTIVE EVALUATION

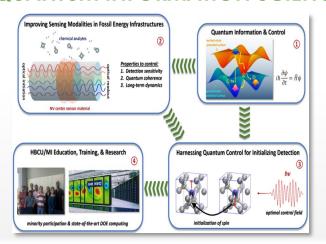




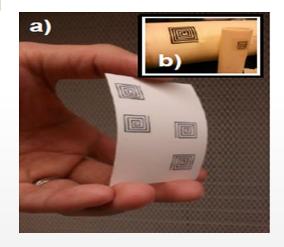
## ARSENIC & SELENIUM IN COAL FLY ASH



#### **QUANTUM INFORMATION SCIENCES**



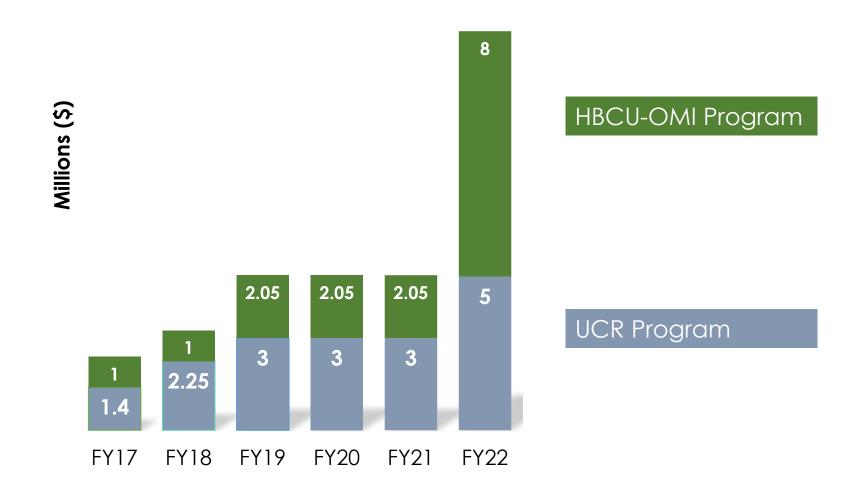
#### **PASSIVE WIRELESS SENSORS**





## UTR Program Budget History







## UTR Program – Project Summary

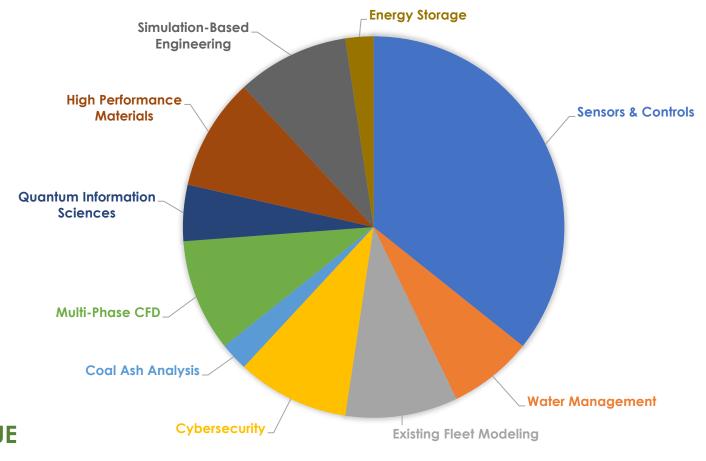


42 TOTAL PROJECTS (ACTIVE)

25 UNIVERSITY COAL RESEARCH (UCR)

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

\$18.3M TOTAL AWARD VALUE (ACTIVE)



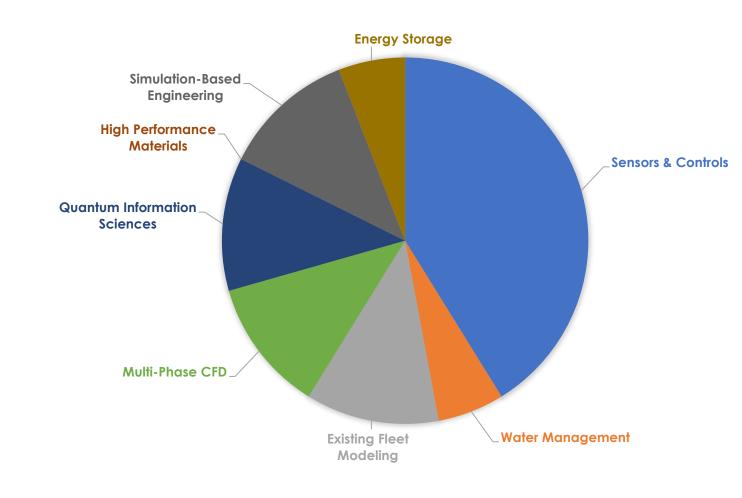
## UTR Program – Project Summary



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)





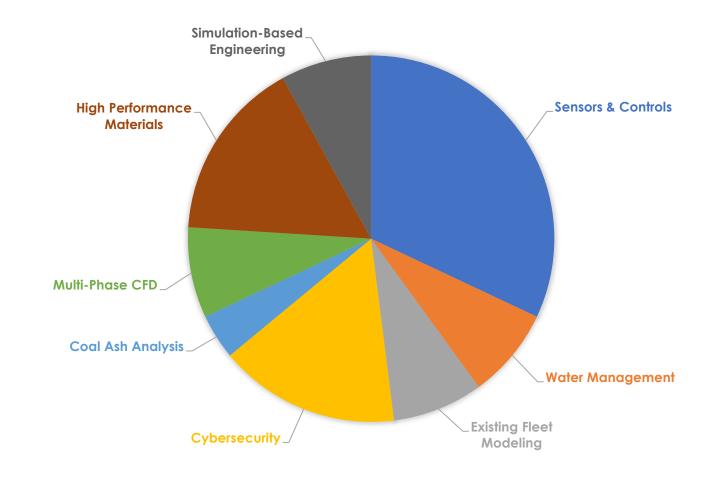
## UTR Program – Project Summary



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 (UNDEERC)\*\*
- University of Texas at El Paso\*\*
- University of Texas at San Antonio
- West Virginia University Research Corporation\*\*



## UTR Program – University Partners (HBCU-OMI)

NATIONAL ENERGY TECHNOLOGY LABORATORY

Historically Black Colleges and Universities, and, Other Minority Institutions





## UTR Program – University Partners (UCR)

#### **University Coal Research Program**

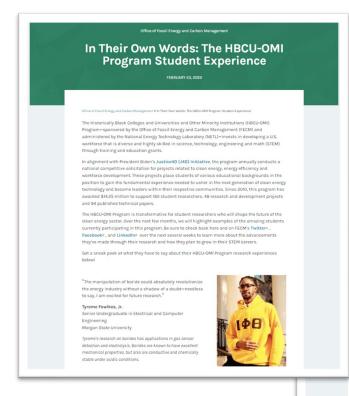




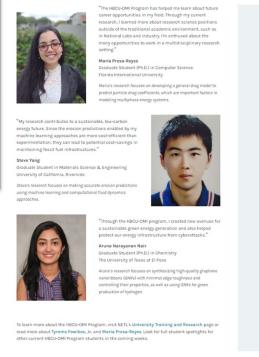


#### In Their Own Words ...





#### 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.



#### UTR Leveraged for Inter-Office Collaborations







Fossil Energy and



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



Office of



Office of Nuclear Energy



Energy Efficiency & Renewable Energy

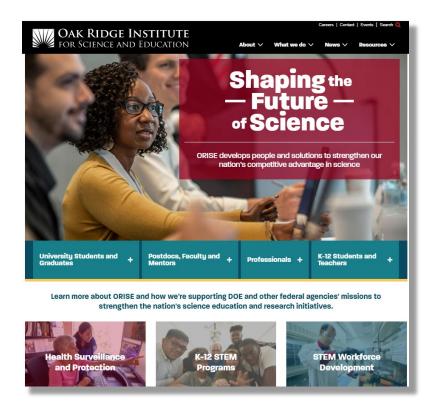




#### Internship & Fellowship Opportunities



## 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



## Thank You!

VISIT US AT: www.NETL.DOE.gov

- @NETL\_DOE
- @NETL\_DOE
- @NationalEnergyTechnologyLaboratory

**University Training and Research** 

https://netl.doe.gov/coal/university-training

#### **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







## MICKEY LELAND ENERGY FELLOWSHIP PROGRAM

U.S. DEPARTMENT OF ENERGY • OFFICE OF FOSSIL ENERGY AND CARBON MANAGEMENT







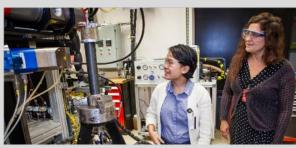
























## MICKEY LELAND ENERGY FELLOWSHIP (MLEF)

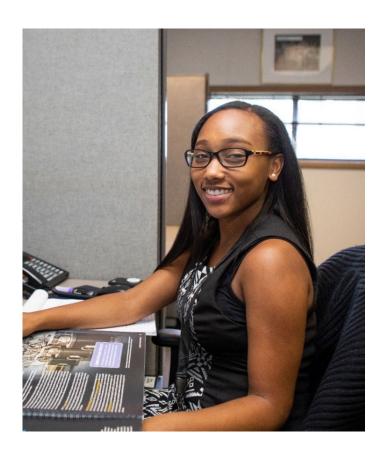




- A 10-week summer research program for Science, Technology, Engineering, and Math (STEM) students
- Receive mentorship from DOE scientists and engineers
- Provide hands-on experience complementing course of study and connect theory to practice
- Increase confidence, enhance communications skills, and promote critical thinking and problem solving

## **MLEF PROGRAM**

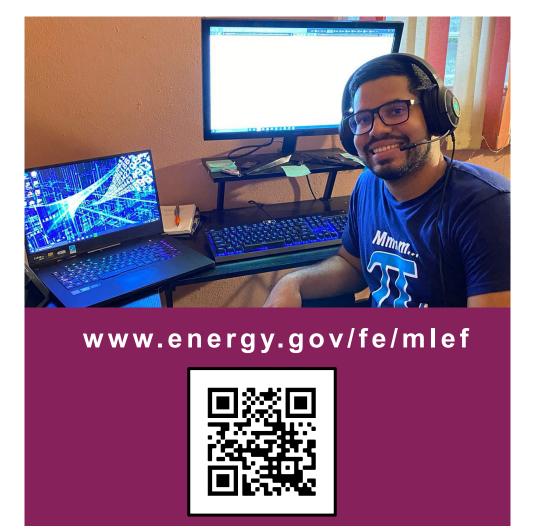




- Advanced Energy Systems
- Carbon Capture, Utilization & Storage
- De-Carbonization
- Modeling & Simulation
- Sensors & Controls
- Geochemical Analysis
- High-Performance Materials
- Gasification Systems
- Turbines

- Solid Oxide Fuel Cells
- Advanced Combustion
- Fuel Cells
- Rare Earth Elements & Critical Minerals
- Project Finance Models
- Machine Learning & Al
- Thin Film Materials
- Membrane Performance Testing

## **MLEF PROGRAM**





#### **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.



## **CONTACT US**



## Sandra Peñaherrera

MLEF@hq.doe.gov

www.energy.gov/fe/mlef



# Overview of the HDSTEM Initiative

#### Alan Perry

Director, Workforce Management, FECM





## **University Training & Research Program**

**Humanities-Driven STEM (HD-STEM)** 

## BACKGROUND

STEM – Science, Technology, Engineering, Mathematics

Social Science – policy, anthropology, communications

Humanities – art, theatre, philosophy

#### STEM and humanities share one goal: improving society

STEM programs can incorporate humanities by

- (1) providing joint curricula to expand humanities students' problem solving in today's world
- (2) enhancing STEM majors' perspective on how to incorporate social and cultural aspects that are critical to successful solutions.



## **University Training & Research Program**

**Humanities-Driven STEM (HD-STEM)** 

## BACKGROUND

#### Why HD-STEM?

Addressing contemporary issues at the local, national, and international levels requires:

- Broader knowledge than that gained in traditional STEM platforms
- Equipping STEM learners with new ways of recognizing the impacts of their technical disciplines resulting in an increased capacity to make decisions based on diverse points of view.

Conversely, a lack of appreciation of the human elements involved with technological advancements can lead to undesirable results, including social, environmental, and energy inequities.

FECM aims to support interdisciplinary curriculum at U.S. colleges and universities to enhance skillsets and problem-solving approaches of STEM students.

Interdisciplinary instruction entails an integration of methods, encourages critical thinking and embraces a more open-minded view on challenging issues and today's problems.



## **University Training & Research Program**

**Humanities-Driven STEM (HD-STEM)** 

## BACKGROUND

#### Through UTR, FECM endeavors to:

Help build a diverse, inclusive workforce capable of effectively working toward the demonstration and deployment of technologies that reduce emissions, address climate change, and ultimately advance the adoption of clean energy technologies.

- Support the principles of equity and environmental justice and understand the impacts of carbon management technologies on communities.
- Develop skillsets to inform strategic decisions and enhancing community support and their inclusion in the decision-making process when siting and deploying technologies.
- Identify and support ways to increase educational opportunities for students in social science focused STEM and humanities majors to engage in interdisciplinary learning.

# Doing Business with the Federal Government - FOA and Requirements



#### Maureen Davison

Grants Management Specialist, Financial Assistance



## 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

version: July 13, 2020

#### FINANCIAL ASSISTANCE FUNDING OPPORTUNITY ANNOUNCEMENT



Department of Energy (DOE)
Office of Fossil Energy (FE)

UNIVERSITY TRAINING AND RESEARCH FOR FOSSIL ENERGY APPLICATIONS
Funding Opportunity Announcement (FOA) Number: DE-FOA-0002398
FOA Type: Initial

CFDA Number: 81.057 University Coal Research

FOA Issue Date:	12/11/2020
Submission Deadline for Full Applications:	02/15/2021/ 8:00 PM ET
Expected Date for Selection Notifications:	April 2021
Expected Date for Award:	June 2021



## Registration/Submission Requirements



- Obtain a Unique Entity Identifier (UEI) (<a href="https://fedgov.dnb.com/webform/">https://fedgov.dnb.com/webform/</a>)
  - This has replaced the DUNS number previously used.
- Register with the System for Award Management (SAM) (sam.gov/SAM)
- Register with <u>grants.gov</u>
- Register with <u>fedconnect.net</u>



## Registration Requirements: Grants.gov



- 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 <u>Grants.gov</u>
- Grants.gov is where you will submit your application package



## Registration Requirements: Fedconnect.net



- Applicants must register with FedConnect (<u>fedconnect.net</u>) 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 <u>grants.gov</u>; 1-800-518-4726; or <u>support@grants.gov</u>
- 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 <u>grants.gov</u> 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 <u>fedconnect.net</u>
- On the Main Page, click on Search Public Opportunities Only



Accessibility Features



 Under Search Criteria, select Issuing Office, type "National Energy Technology Lab", and click on Search

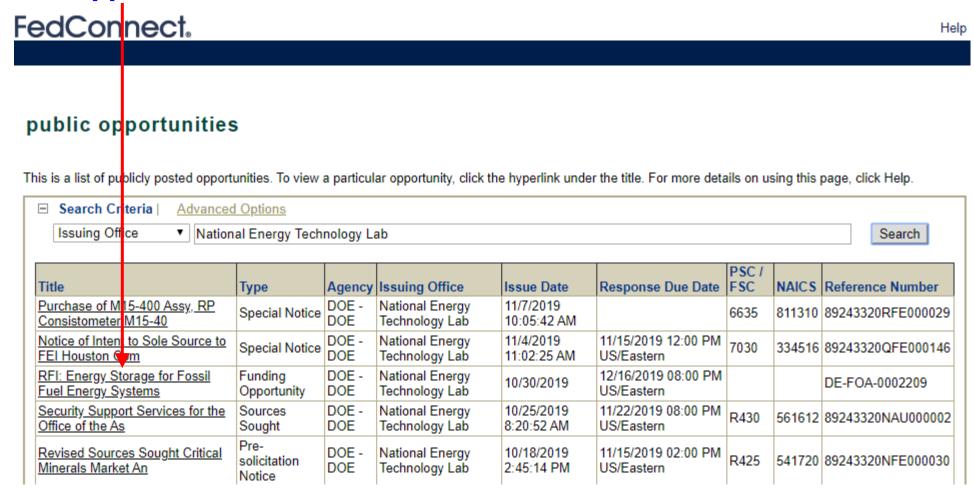
#### This is a list of publicly posted opportunities no view a particular opportunity, click the hyperlink under the title. For more details on using this page, click Help. ■ Search Criteria I Issuing Office National Energy Technology Lab Search PSC / Title Type Agency **Issuing Office** Issue Date Response Due Date NAICS | Reference Number DOE -National Energy Technology 12/01/2020 04:00 PM Vacuum Induction Melting (VIM) and Casting Furnace Solicitation 11/9/2020 4430 333994 89243321QFE000206 DOE US/Eastern DOE -National Energy Technology 11/30/2020 12:00 PM 11/24/2020 1:27:09 Notice of Intent to Sole Source to FEI Houston Company for FEI PerGeos 1.0 soft Special Notice 7A20 511210 89243321QFE000209 DOE US/Eastern DOE -National Energy Technology 11/20/2020 1:17:28 Notice of Intent to Sole Source to EPRI Technology Special Notice 541690 89243321RFE000048 DOE DOE -National Energy Technology 12/11/2020 08:00 PM Funding 11/16/2020 Emerging CO2 Storage Technologies: Optimizing Performance Through Minimization of Seismicity Risks and Monitoring Caprock Integrity DE-FOA-0002401 DOE US/Eastern Opportunity DOE -National Energy Technology 12/07/2020 08:00 PM Funding Notice of Intent to issue DE-FOA-0002438 titled Design, R&D, Validation, and Fabrication of a Prototype Carbon-Based Building 11/12/2020 DE-FOA-0002442 DOE US/Eastern Opportunity DOE 11/25/2020 05:00 PM National Energy Technology 11/10/2020 11:56:01 Broughton Volunteer Fire Department (BVFD) Services Special Notice 922160 89243321QFE000207 DOE US/Eastern 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 DOE -12/15/2020 08:00 PM National Energy Technology 10/30/2020 DE-FOA-0002430 Power Generation". Opportunity DOE US/Eastern DOE -National Energy Technology 11/19/2020 11:59 AM Enabling Gasification of Blended Coal, Biomass and Plastic Wastes to Produce Hydrogen with Potential for Net Negative Carbon Dioxide Emissions. 10/23/2020 DE-FOA-0002376 DOE US/Eastern Opportunity DOE -10/23/2020 02:00 PM National Energy Technology Bottled Water and Dispenser Service for NETL Solicitation 10/9/2020 454390 89243320QFE000205 DOE US/Eastern DOE National Energy Technology 11/06/2020 08:00 PM Funding 10/14/2020 Research Needs Related to Enhanced Weathering as a Mechanism for Carbon Dioxide Removal DE-FOA-0002427 DOE US/Eastern Opportunity 1 2 3 4 5 6 7 8 9 10 ...



public opportunities



Click the hyperlink under the title to view





3610 Collins Ferry Road

Morgantown, WV 26507-0880

P.O. Box 880

Place of Performance:



- 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

FedConnect. Videos Opportunity: Crosscutting Research for Coal-Fueled Power Plants Documentation What do I do now? Description. The purpose of Amendment 000001 is to re-open the is is the opportunity summary page. To the left you will see a description and an FOA to receive applications in response to the second Overview overview of this opportunity. To the right closing date, to change the second application closing DE-FOA-0002001 you will see a list of the attached due date to 12/12/2019, and to incorporate revisions. Please read the FOA document carefully when documentation. To view any of the Budget Justification File attachments, simply click the attachment preparing your application. Amendment 1 Overview DE-FOA-0002001 - Amendment 000001 Overview registered Users Reference number: DF-FOA-000200 To register interest in this opportunity or to 09/23/2019 electronically respond, you must first sign Response due: 12/12/2019 11:59 PM in. Click the Sign In button below. US/Eastern Sign In Set Aside: NAICS: PSC / FSC: Non Registered Users You can view this or any other public Agency: DOE opportunity. However, registered users have numerous added benefits including Contracting office: the ability to submit questions to the agency, receive emails concerning updates National Energy Technology Lab and amendments, create and manage a U.S. Department of Energy response team and submit responses Morgantown Campus directly through this site.

> Becoming a registered user is fast, free and takes only a few minutes. To get

started, click the Register Now button

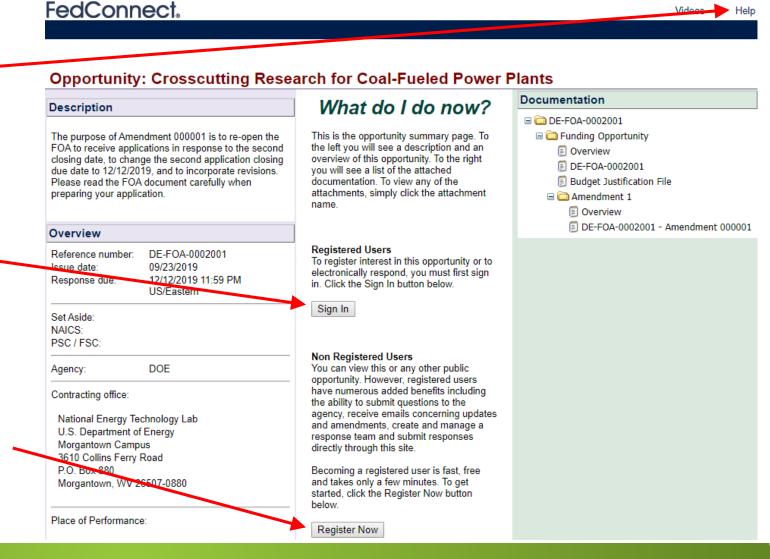
below.

Register Now





- 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 <a href="https://www.fedconnect.net/">https://www.fedconnect.net/</a>

Grants.gov<a href="https://grants.gov/">https://grants.gov/</a>

- Proposals will only be accepted through <u>Grants.gov</u> only( this will be indicated in the solicitation document).
- Additional information can also be found at NETL Business website: <a href="https://netl.doe.gov/business/solicitations">https://netl.doe.gov/business/solicitations</a>
- An email listserve of FECM announcements can be signed up for: <a href="https://public.govdelivery.com/accounts/USDOEOFE/subscriber/new">https://public.govdelivery.com/accounts/USDOEOFE/subscriber/new</a>



## University Training Research Announcement - The FOA and Application



#### Maureen Davison

Grants Management Specialist, Financial Assistance



### **General Information**

## NATIONAL ENERGY TECHNOLOGY LABORATORY

#### 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.

#### TABLE OF CONTENTS MAIN SECTIONS

- I. FUNDING OPPORTUNITY DESCRIPTION
- II. AWARD INFORMATION
- III. ELIGIBILITY INFORMATION
- IV. APPLICATION AND SUBMISSION INFORMATION
- V. APPLICATION REVIEW INFORMATION
- VI. AWARD ADMINISTRATION INFORMATION
- VII. QUESTIONS/AGENCY CONTACTS
- VIII. OTHER INFORMATION
- IX. APPENDICES



## I. Funding Opportunity Description

#### Where to start?



#### TABLE OF CONTENTS

- I. FUNDING OPPORTUNITY DESCRIPTION
  - i. AUTHORIZING STATUES
  - ii. BACKGROUND/DESCRIPTION
  - iii. OBJECTIVES/AREAS OF INTEREST
  - iv. Applications Specifically Not of Interest

### **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?



#### TABLE OF CONTENTS

- A, TYPE OF APPLICATION
- **B.** Type of Award Instrument

#### C. AWARD OVERVIEW

- i. ESTIMATED FUNDING, NUMBER OF AWARDS, ANTICIPATED AWARD SIZE, AND MAXIMUM DOE SHARE
- ii. ESTIMATED PERIOD OF
  PERFORMANCE PER AREA OF
  INTEREST

### **Noteworthy Items**

#### C. Award Overview

- I. Estimated Funding, Number of Awards, Anticipated Award Size, and Maximum DOE Share
  - 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
  - Includes the anticipated period of performance for projects awarded under each Area of Interest of the FOA.



## III. Eligibility Information

#### Where to start?



#### TABLE OF CONTENTS

#### A. GENERAL

#### **B. ELIGIBLE APPLICANTS**

- i. RESTRICTED ELIGIBILITY
- ii. DOMESTIC ENTITIES
- iii. DOMESTIC PUBLIC ENTITIES (EXCLUDING FEDERAL ENTITIES)
- iv. FEDERALLY FUNDED RESEARCH AND
  DEVELOPMENT CENTERS AND NATIONAL LABS

#### C. COST SHARING

- i. Cost Share Requirements
- ii. LEGAL RESPONSIBILITY
- iii. COST SHARE ALLOCATION
- iv. Cost Share Types and Allowability
- v. Cost Share Verification
- vi. COST SHARE CONTRIBUTIONS BY FFRDCS

#### D. COMPLIANCE CRITERIA

#### E. RESPONSIVENESS CRITERIA

- F. NUMBER OF SUBMITTALS ELIGIBLE FOR REVIEW
- G. FELONY CONVICTIONS AND TAX LIABILITIES
- H. QUESTIONS REGARDING ELIGIBILITY

#### **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
  - 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.





#### Where to start?



#### TABLE OF CONTENTS

- A. FORM AND CONTENT REQUIREMENTS
- **B. FULL APPLICATIONS** 
  - i. APPLICATION PACKAGE
  - ii. CONTENT AND FORM OF FULL APPLICATION
- C. Post-Selection Information Requests
- D. SUBMISSION DATES AND TIMES
- E. INTERGOVERNMENTAL REVIEW
- F. OTHER SUBMISSION AND REGISTRATION REQUIREMENT
  - . REGISTRATION PROCESS
  - ii. WHERE TO SUBMIT
  - iii. FULL APPLICATION PROOF OF TIMELY
    SUBMISSIONS
- G. FUNDING RESTRICTIONS
- H. PRE-AWARD COSTS
- I. PRE-AWARD COSTS RELATED TO NATIONAL
- ENVIRONMENTAL POLICY ACT (NEPA) REQUIREMENT
- J. PERFORMANCE OF WORK IN THE UNITED STATES
- K. FOREIGN TRAVEL
- L. EQUIPMENT AND SUPPLIES
- M. LOBBYING
- N. ADDITIONAL APPLICATION AND SUBMISSION

**REQUIREMENTS** 

#### **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.





#### **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

- 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.





#### **Project Narrative**

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

 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 10point 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.





#### **Project Narrative Sections**

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

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





#### **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 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/def ault/files/2018-02/451 1-1-3 0.pdf





#### **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





#### **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
- Use the SF 424A Excel, "Budget Information Non-Construction Programs" form on the DOE Financial Assistance Forms Page at <a href="https://www.energy.gov/management/office-management/operational-management/financial-assistance-forms">https://www.energy.gov/management/office-management/operational-management/financial-assistance-forms</a> under DOE budget forms

 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.



## 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
    - 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 <u>Provides important templates to follow while developing</u> your application



## Responding to Areas of Interest (AOIs)



#### **Heather Hunter**

Project Manager, Integrated Carbon Management Team



## **Areas of Interest**



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

Describe in detail each area of research where NETL is seeking proposals

Should be carefully considered as a potential topic for research proposals

### **Areas of Interest**

Number/types of areas of interest are dependent on funding in particular areas, DOE mission goals, and technology maturity

Areas of Interest change annually

May also include descriptions of research that are NOT being sought in the FOA



## **Previous Areas of Interest**



## FY 2021

DE-FOA-0002398

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

DF-FOA-0002193

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

DE-FOA-0001991

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



## 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



## **Example Area of Interest**



FY 2021 AOI 1B: Electromagnetic Energy-Assisted Approaches to Convert Fossil Fuels to Low Cost Hydrogen (DE-FOA-0002398)

## **Not an Active Area of Interest**

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
  - Provide letters of support
  - Financial investment if applicable
  - 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
  - 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



## Responding to FOAs



## **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



Address the "Cake" prior to the "Icing"



## **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:

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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 Summer UTR FECM Webinar

## Any Questions?



Solutions for Today | Options for Tomorrow



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Solutions for Today | Options for Tomorrow

