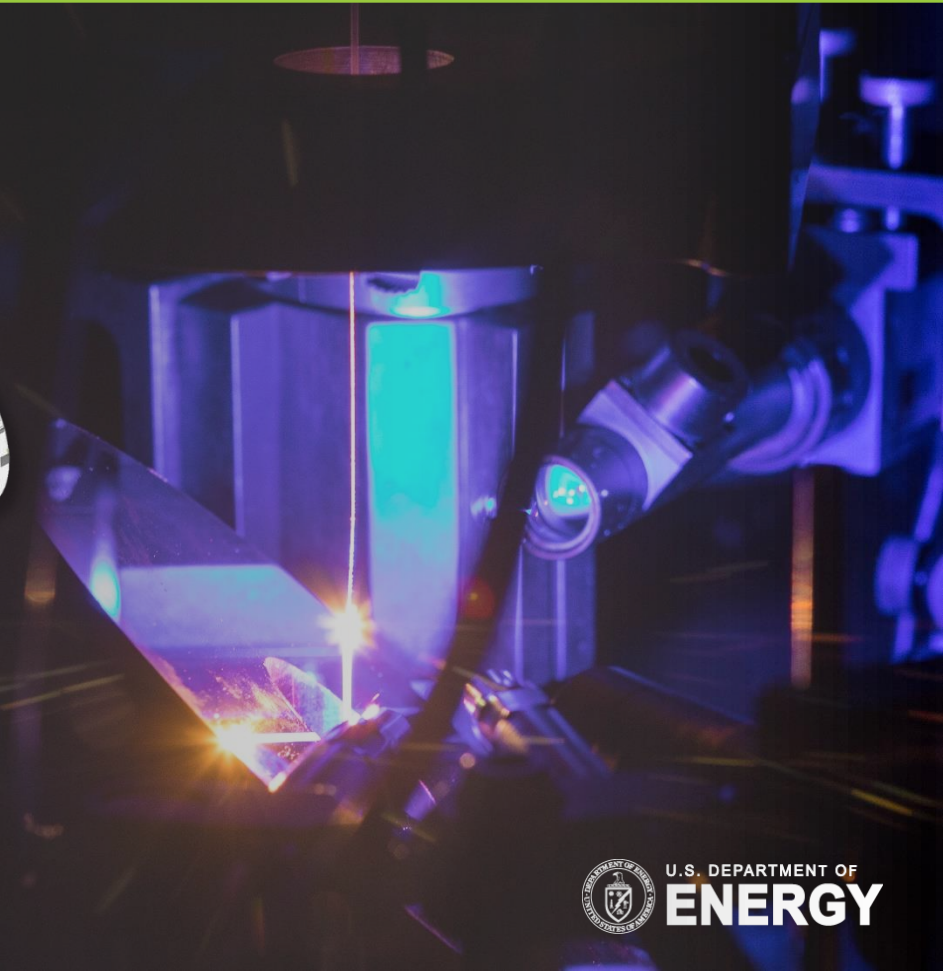
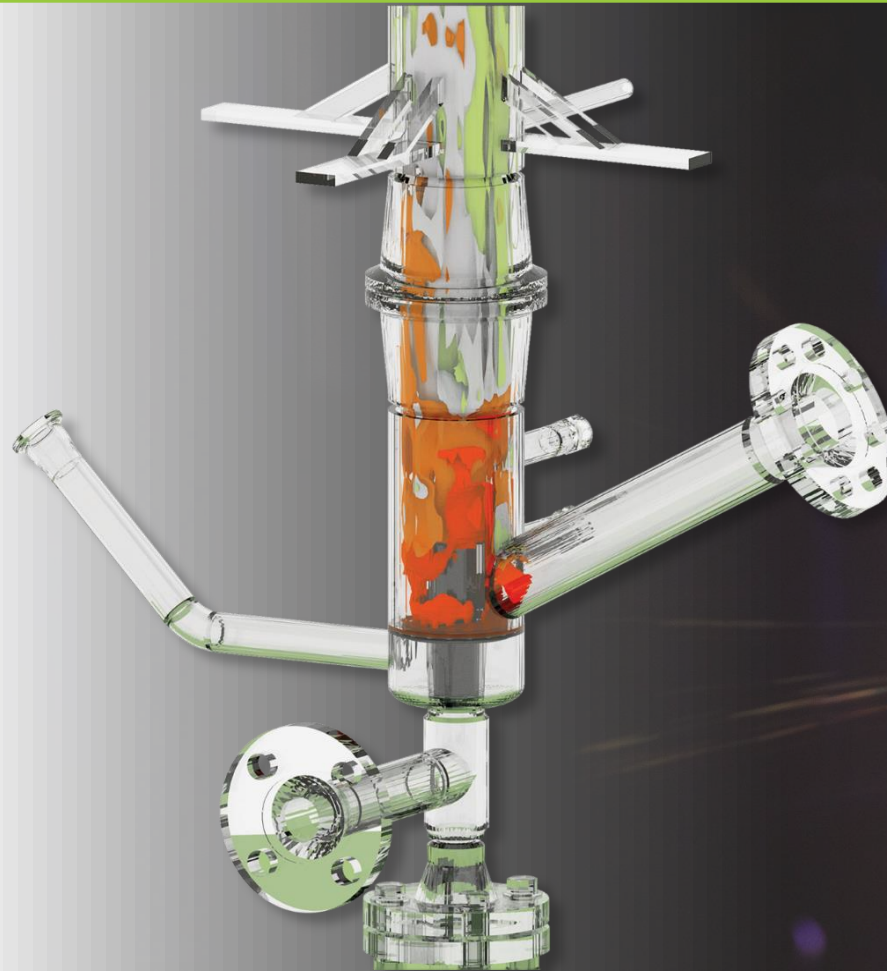


# How to Partner With NETL



Solutions for Today | Options for Tomorrow

James M. Ferguson & Anthony Armaly  
Strategic Partnerships, Business Development,  
Technology Transfer and Commercialization



# NETL Budget



## FY 2019 Budget

\$1.03 Billion (10/1/2018 – 9/30/2019)

### Coal Program

Carbon Capture	\$101M
Carbon Storage	\$ 98M
Adv. Energy Systems	\$130M
Crosscutting Research	\$ 56M
NETL Coal R&D	\$ 36M
Rare Earth Elements	\$ 18M
STEP (sCO2 Electric Power)	\$ 22M
Transformational Coal Pilots	\$ 25M

### FE Program Support

Program Direction	\$ 27M
NETL Research & Ops.	\$ 50M
NETL Infrastructure	\$ 45M

### Non-Fossil Programs

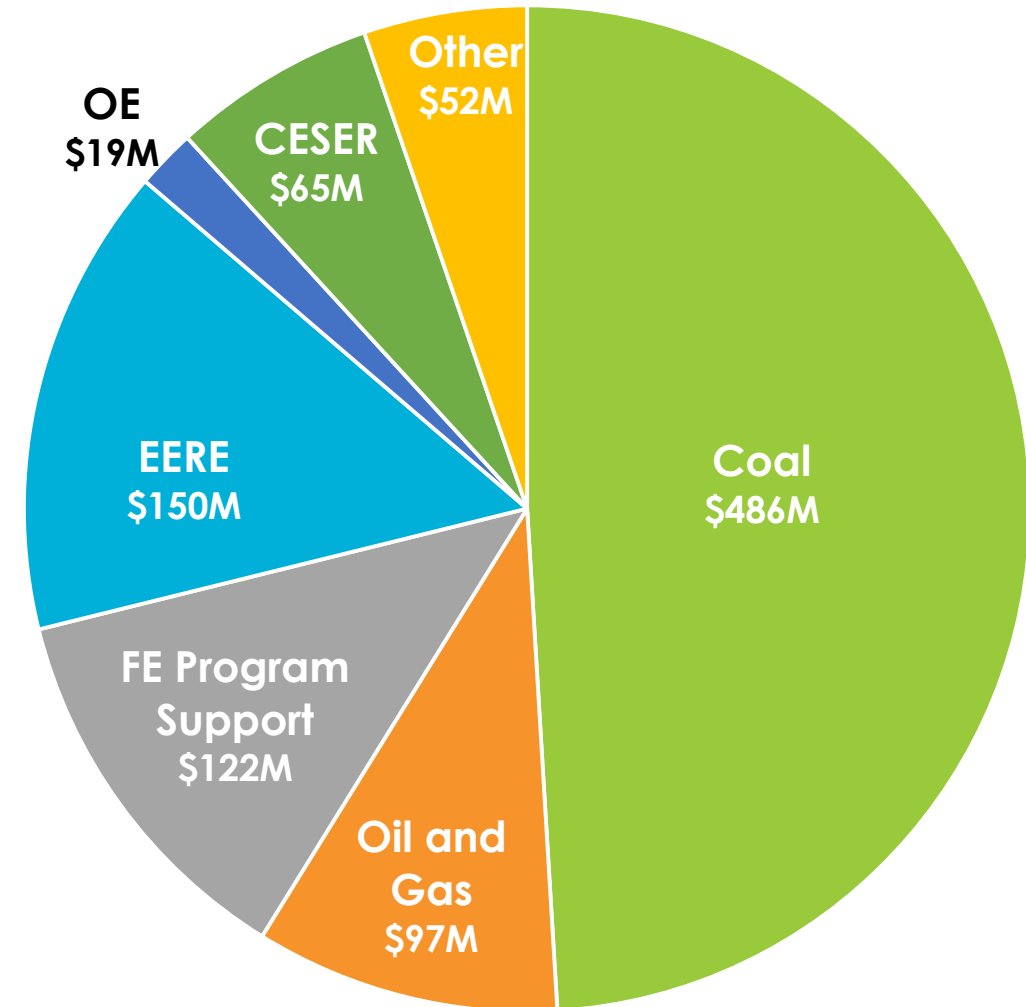
EERE (Efficiency & Renewables)	\$150M
Office of Electricity	\$ 19M
CESER (Cybersecurity)	\$ 65M

### Strategic Partnerships

Other	\$ 52M
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### Oil & Gas Program

Natural Gas Technologies	\$ 51M
Unconventional FE Tech.	\$ 46M



# Partnering with NETL

## People, Facilities, & Technologies

NETL supports technology commercialization by:

- Enabling technology breakthroughs
- Creating public-private partnerships
- Informing technology pathway & policy decisions
- Enhancing U.S. technology leadership & global competitiveness

NETL is the nation's only national laboratory devoted to enabling & accelerating fossil energy technology discovery, development, & deployment.

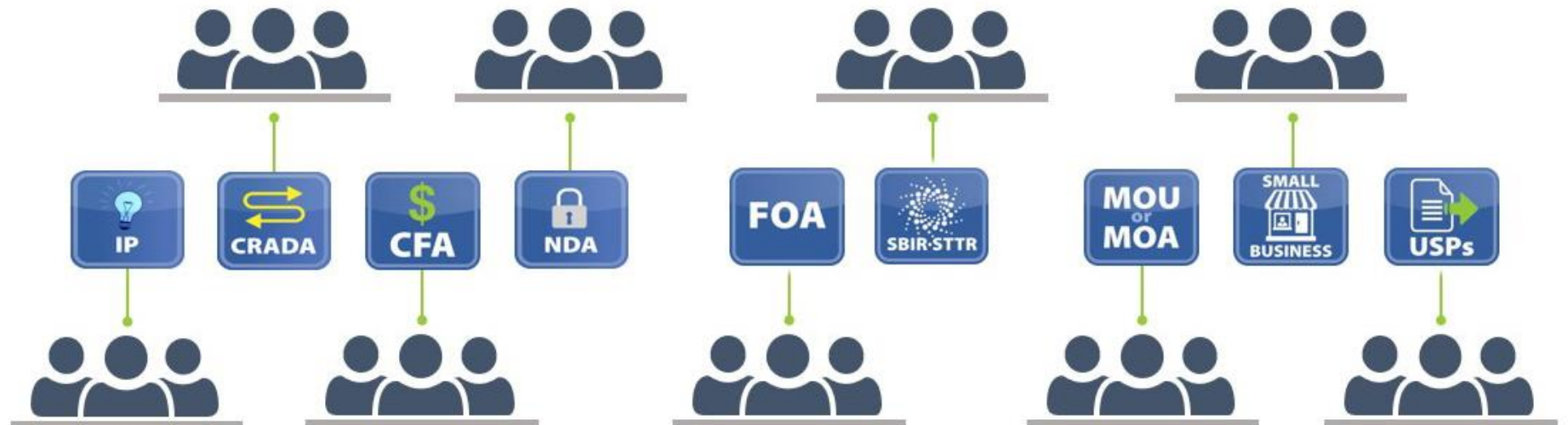


# Partnering with NETL

People, Facilities, & Technologies

## Mechanisms NETL uses to enable collaboration include:

- Non-Disclosure Agreements (NDAs)
- Cooperative Research and Development Agreements (CRADAs)
- Memorandum of Understanding/Agreement (MOU/MOA)
- Contributed Funds-in Agreement (CFA)
- Funding Opportunity Announcements (FOA) and Small Business Technology Transfer (SBIR/STTR)
- Licenses





# Toolbox



## Working with NETL

## How to Work With NETL

### Cooperative Research and Development Agreements (CRADA)

CRADAs allow for joint R&D performed by NETL and participant researchers. Background intellectual property (IP) protection is included for both parties and CRADA developed IP is addressed. CRADAs offer participants the right of first refusal to an exclusive license for jointly developed IP. Cost sharing between NETL and CRADA participant is essential. Small businesses are given preferential consideration.

[www.netl.doe.gov/business/licensing](http://www.netl.doe.gov/business/licensing)

### Contributed Funds-In Agreements (CFA)

Like CRADAs, CFAs are agreements between the federal government and private sector participants to work together on a mutually beneficial project. However, in a CFA, the private sector participant provides funds to NETL for a specific scope of work to be completed. At the end of the project, NETL reports research findings back to the participant.

[www.netl.doe.gov/business/licensing](http://www.netl.doe.gov/business/licensing)

### Memoranda of Understandings (MOU) or Memoranda of Agreements (MOA)

MOUs and MOAs are written agreements between NETL and other entities that state the scope of work for a specific project or state the terms of a partnering relationship. Parties to these agreements may include other federal agencies, local, state, international, or other government entities; the private sector; and educational institutions. Actual implementation of the understandings established by the MOU or MOA must be accomplished through a legally binding instrument such as an interagency agreement, contract or other appropriate agreement between the parties (as applicable).

[www.netl.doe.gov/business/licensing](http://www.netl.doe.gov/business/licensing)

### Non-Disclosure Agreements (NDA) & Non-Analysis Agreements (NAA)

NDAs are used when NETL and/or another party wish to exchange information that is either considered potentially patentable by NETL or proprietary by the other party. NETL is bound to information confidential by the Trade Secrets Acts (18 USC Sec. 1905). However, NETL will enter into an NDA that reiterates this protection. NDA may be unilateral or bi-lateral. NETL only executes its own NDAs.

NAA's protect NETL patented technology that is shared with another party for a pre-negotiated purpose, such as testing or further research. The other party agrees not to analyze the technology to determine composition, use the technology for commercial purposes, or transfer the technology to another party.

[www.netl.doe.gov/business/licensing](http://www.netl.doe.gov/business/licensing)



### Licenses

Licenses transfer NETL-owned intellectual property (IP) from the government to the private sector. NETL looks for licensing partners with a plan for technology development and marketing, with a high probability for technology commercialization and sharing IP benefits with the public.

[www.netl.doe.gov/business/licensing](http://www.netl.doe.gov/business/licensing)



### Small Business Innovation Research (SBIR) & Small Business Technology Transfer (STTR) Programs

SBIR and STTR are U.S. government programs in which federal agencies with funding for small businesses only. Small businesses that win awards in these programs keep the rights to any technology developed and are encouraged to commercialize the technology.

The SBIR and STTR programs have three distinct phases. Phase I explores the feasibility of innovative concepts with awards up to \$150,000 for about 9 months. Only Phase I award winners may compete for Phase II, the principal R&D effort, with awards up to \$1,000,000 over a two-year period. There is also a Phase III, in which non-federal capital is used by the small business to pursue commercial applications of the R&D. Federal agencies may award non-SBIR/STTR-funded, follow-on grants or contracts.

[www.netl.doe.gov/node/3493](http://www.netl.doe.gov/node/3493)



### Funding Opportunity Announcements (FOA) & Financial Assistance Awards (FA)

A FOA is a notice of a federal grant funding opportunity. NETL uses FedConnect and/or Grants.gov and FedBizOpps to post solicitations FOAs and amendments related to the energy sector receive proposals and applications, and disseminate award information. Proposals accepted only as indicated in the solicitation document.

[www.netl.doe.gov/business/solicitations](http://www.netl.doe.gov/business/solicitations)

FAs support specific research activities conducted outside of NETL, resulting in cooperative agreements or grants. FAs may be unsolicited or the result of the competitive FOA process.

<https://www.netl.doe.gov/node/5719>



### Unsolicited Proposals (USP)

A USP is an application for support of an idea, method, or approach is submitted by an individual, business, or organization, based solely on the proposer's initiative rather than in response to a DOE solicitation. Funding of unsolicited proposals is considered a noncompetitive action.

[www.netl.doe.gov/business/unsolicited-proposals](http://www.netl.doe.gov/business/unsolicited-proposals)

Michael Knaggs

Associate Director of Strategic Partnerships  
[Michael.Knaggs@netl.doe.gov](mailto:Michael.Knaggs@netl.doe.gov)

# Funding Opportunity Announcements



- **Funding Opportunity Announcements** (FOAs) are NETL notice of a competitive federal financial assistance funding opportunity.
- NETL uses **FedConnect.net**, **Grants.gov** and **FedBizOpps.gov** to post FOAs and amendments, to receive proposals and applications, and to disseminate award information.
- Proposals and applications are **only accepted electronically through FedConnect.net or Grants.gov** as indicated in the FOA document.

## Future Opportunities:

For a list of **NETL's open funding opportunities** please visit:

<http://www.netl.doe.gov/business/solicitations/index.html>

Interested parties may **register through this NETL Business page** to receive routine notification of new FOA opportunities.

# Small Business Innovation Research / Small Business Technology Transfer (SBIR/STTR)



- The Office of Fossil Energy (FE) at DOE manages a Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Program through NETL
- Congress established the SBIR/STTR programs in 1982 to support scientific excellence and technological innovation
- FE/NETL seek innovative ideas for research from small businesses in the areas of **Clean Coal and Carbon Management** and **Oil & Natural Gas Technologies**.



# SBIR-STTR Program



## Stimulate High-Tech Entrepreneurial Innovation



## SBIR – Small Business Innovation Research STTR – Small Business Technology Transfer

### Program Characteristics:

- Limited Competition
- Intellectual Property (IP) and data rights specific to SBIR-STTR
- Potential for progressive funding through phases

### Contacts:

**Maria Reidpath**  
NETL SBIR/STTR Coordinator  
304-285-4140  
[maria.reidpath@netl.doe.gov](mailto:maria.reidpath@netl.doe.gov)

Douglas Archer  
FE SBIR/STTR Portfolio Manager  
301-903-9443  
[douglas.archer@hq.doe.gov](mailto:douglas.archer@hq.doe.gov)

### One Idea – Three Phases:

- **Phase I:** Proof of Concept / Feasibility
- **Phase II:** Prototype of Innovative Concept
  - Phase IIA: Continue R&D within scope
  - Phase IIB: Continue R&D beyond scope towards commercialization
- **Phase III:** Pursuit of commercial application (non-SBIR-STTR funding is used, i.e. private or other governmental funding)

### More Information:

- Mailing list go to <http://science.energy.gov/sbir/> notifications release of topics, FOAs, webinars, other updates
- Announcement of Topic and FOA Release at <http://science.energy.gov/sbir/funding-opportunities/>



# Small Business Innovation Research / Small Business Technology Transfer (SBIR/STTR)

## SBIR/STTR Program at NETL (FY 2019)

PROGRAM	PROJECTS		PHASE I	PHASE II
SBIR	48		15	33
STTR	10		6	4
TOTAL	58		21	37
<b>TOTAL FUNDING: \$59,149,824</b>				

# SBIR/STTR FY 2020 Funding Opportunities



The following Fossil Energy R&D areas participated in the FY 2020 SBIR/STTR Phase I, Release 2 Funding Opportunity Announcement (FOA):

- **Advanced Turbines Technologies:** low cost, high-yield advanced manufacturing techniques for ceramic matrix composite applicable to combustion hot gas path components; sensors for turbine applications; low flow high pressure ratio compressors providing support to supercritical carbon dioxide (sCO<sub>2</sub>) power cycles; expansion joint technology for sCO<sub>2</sub> power cycles; other
- **Carbon Capture Technologies:** novel materials or processes; direct air capture; process intensification for systems; other
- **Carbon Storage Technologies:** integrating technologies to lower uncertainties; developing graphical user interface and software distribution platform for an Integrated model for geologic carbon storage containment and leakage risk assessment; other
- **Carbon Utilization:** plasma technologies; production of solid carbon materials; other
- **Crosscutting Technologies:** supply chain enhancements for FE alloy production; automated plant component inspection, analysis, and repair enabled by robotics; real-time monitoring of Se, Hg, and As in coal power plant effluent streams; other
- **Fuel Cells:** sensors for SOFC applications; additive manufacturing for SOFC cell, stack, or balance of plant (BOP) components; other
- **Transformative Power Generation:** advanced hybrid fossil energy systems with energy storage; improving the performance of the existing coal fleet; modeling and validation of heat transfer for indirect sCO<sub>2</sub> coal-fired boilers; other

# NETL Available Technologies for R&D and Licensing



- NETL has a number of technologies and inventions available for further research & development and/or licensing
- To search the NETL inventions database, please visit: [netl.doe.gov/business/tech-transfer/available-technologies](https://netl.doe.gov/business/tech-transfer/available-technologies)
- For more information, and for inquiries, please e-mail: [techtransfer@netl.doe.gov](mailto:techtransfer@netl.doe.gov)

# Partnering with NETL



## What You Can Do Next:

- Request an **introductory meeting and a lab tour.**
- Attend **peer reviews, workshops, conferences, technical forums, etc.**
- Apply for **competitive, cost-shared funding opportunities.**
- Collaborate on **research & development, and technology innovation through agreements (CRADAs, CFAs, NDAs, etc.).**
- Assist on **education & outreach activities, including K-12 STEM education and the Science Bowl.**

# Contact Information



***For More Information, Contact James Ferguson***

***James.Ferguson@netl.doe.gov***

***(412) 386-6043***

***www.netl.doe.gov***



# THANK YOU FOR ATTENDING!

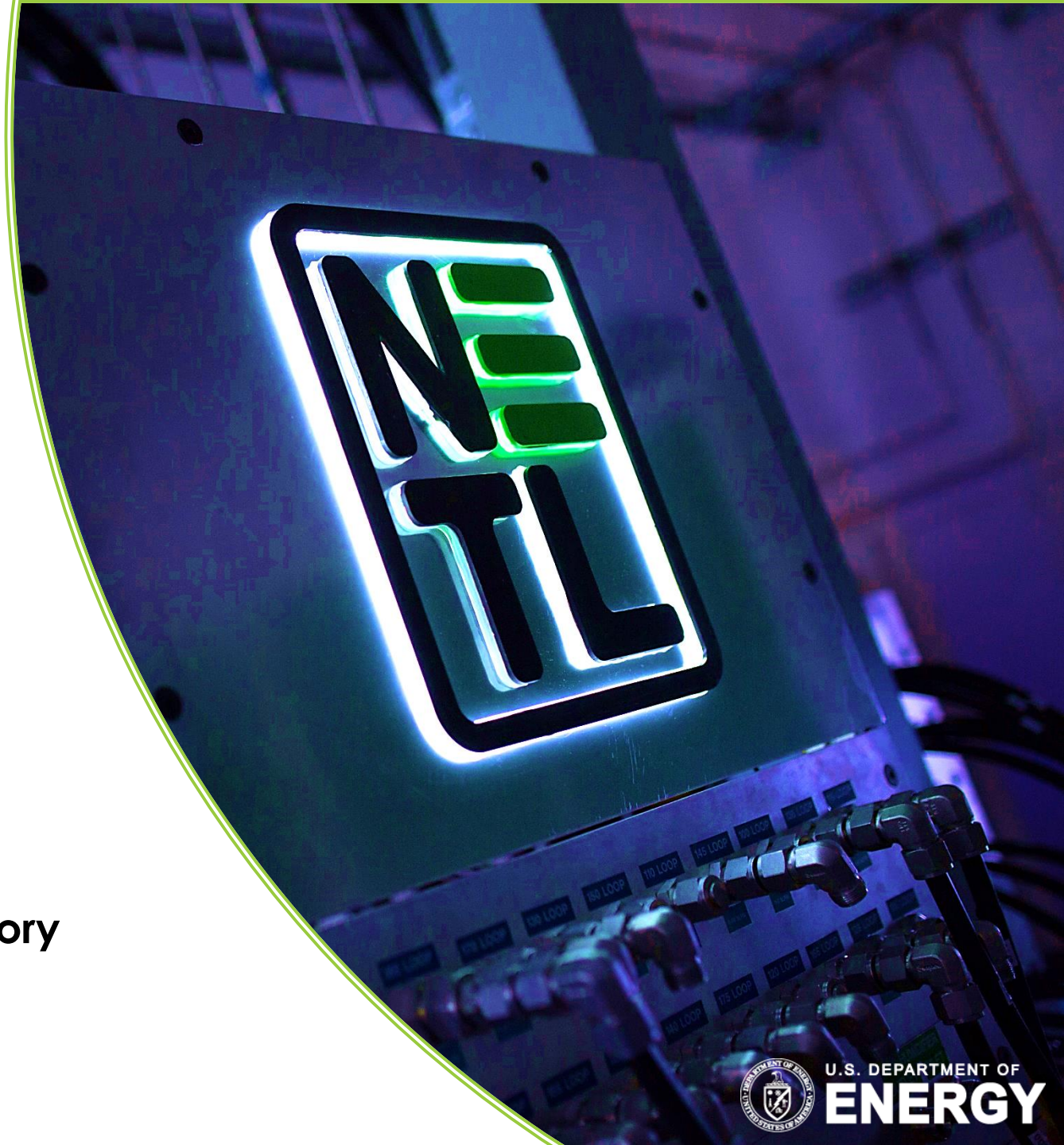
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VISIT US AT: [www.NETL.DOE.gov](http://www.NETL.DOE.gov)

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 @NationalEnergyTechnologyLaboratory



U.S. DEPARTMENT OF  
**ENERGY**

# Back-up Slides

# Technology Commercialization Fund (TCF)



## Matching Funds for Technology Development

The TCF funding is **matched with funds from private partners** to promote promising energy technologies for commercial purposes. The TCF represents **a nearly \$20M** funding opportunity.

The three key areas identified as integral to DOE's technology transition efforts include:

- Encouraging increased national lab technology maturation
- Facilitating strategic CRADA approaches to increase commercial impact
- Enabling national laboratories to pursue active industry engagement & customer scouting for promising energy technologies

## How does it work?

- **Lab Call issued around Oct/Nov timeframe**
- **Project based upon National Lab developed technology**
- **Two topics:**
  1. Technology Maturation (at least TRL 3)
  2. Cooperative Development Projects with commercial application focus



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

### Areas of Interest

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

Should be carefully considered as a potential topic for research proposals

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

## 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

## Get Organized Early

- Create a Proposal Team
- Identify key research team members
- Consider teaming with another institutions
  - Provide letters of support
  - Financial investment if applicable
  - Be as specific as possible
- Develop 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

## 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

# Two Keys to Writing Effective Applications

- **Adhere to FOA Guidance** on key submittal items such as:
  - Project Narrative
  - Statement of Project Objectives (SOPO)
  - Project Management Plan
  - Project Summary/ Abstract
- **Specifically Address Merit Review Criteria as they relate to the FOA Areas of Interest**

# Project Narrative – Address each item!

- 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)

# Regional Workforce Initiative (RWFI)



## Mission & Execution

**NETL Regional Workforce Initiative (RWFI)** is a platform for engagement and collaboration with key stakeholders who are critical for the deployment of U.S. DOE and NETL Energy and Advanced Manufacturing technology research.

*Supporting Regional Economic and Workforce Development opportunities.*

**400+**  
individual regional  
and national  
stakeholders

**137**  
institutions and  
organizations  
represented

**200+**  
subscribed to the  
NETL RWFI e-Note  
Monthly Newsletter

**300+**  
registrants to the  
NETL RWFI Webinar  
Series

# Regional Workforce Initiative (RWFI)

## Key Outcomes to Date



Establishment of a new network  
of regional stakeholders



Consistent engagement with  
key regional partners



Integration of Workforce Workplan



Increased communication of NETL mission



Increased growth for potential collaborative opportunities



## What Can I Do Next?

# Partnering with NETL



## What You Can Do Next:

- Request an **introductory meeting and a lab tour.**
- Attend **peer reviews, workshops, conferences, technical forums, etc.**
- Apply for **competitive, cost-shared funding opportunities.**
- Collaborate on **research & development, and technology innovation through agreements (CRADAs, CFAs, NDAs, etc.).**
- Assist on **education & outreach activities, including K-12 STEM education and the Science Bowl.**

# NETL's Unsolicited Proposal Process



## NETL receives Unsolicited Proposals for all of DOE:

- Application for support of an idea, method, or approach
- Submitted by an individual, business, or organization
- Based solely on the proposer's initiative rather than in response to a DOE solicitation
- Considered a non-competitive action

## DOE may accept an Unsolicited Proposal if it:

- Demonstrates a unique and innovative concept or a unique capability
- Offers a concept or service not otherwise available to the Federal government
- Does not resemble a recent or current competitive solicitation

DOE Unsolicited Proposal Process: [www.netl.doe.gov/business/unsolicited-proposals](http://www.netl.doe.gov/business/unsolicited-proposals)

# High Efficiency Low Emissions Power Generation

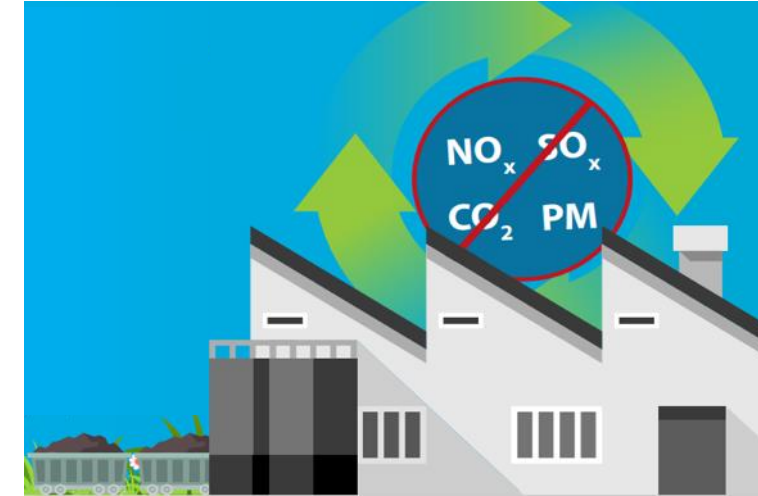
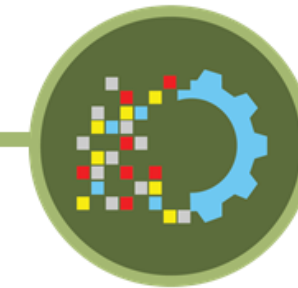
**F**lexible

**I**nnovative

**R**esilient

**S**mall

**T**ransformative



## NETL Focus Areas

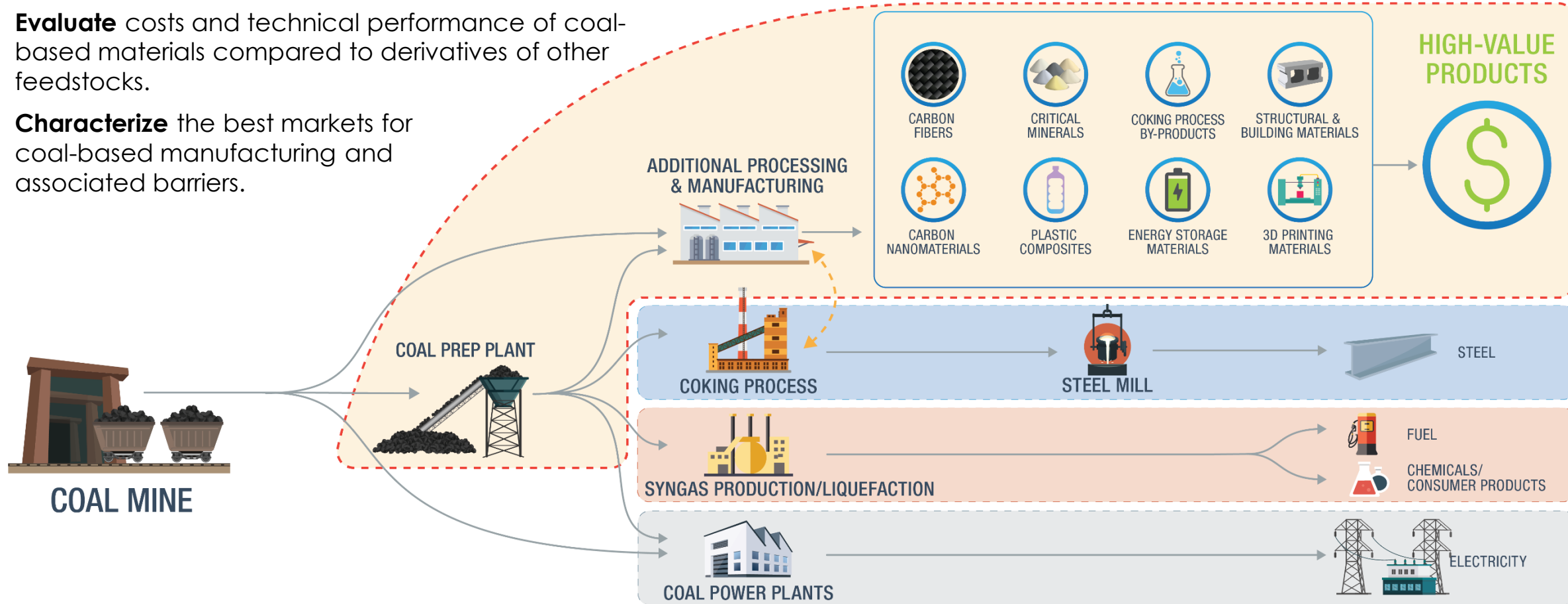
- **Reduce** time required to design, construct, and commission new coal-based power systems
- **Minimize** water consumption and criteria emissions
- **Be carbon-capture ready** to reduce CO<sub>2</sub> emissions
- **Integrate** with energy storage, coal upgrading, or other opportunities for enhanced value stream realization
- **Enhance** demand responsiveness, including rapid start-up and high efficiency operation through wide range

# Manufacturing High-Value Carbon Products from Domestic Coal

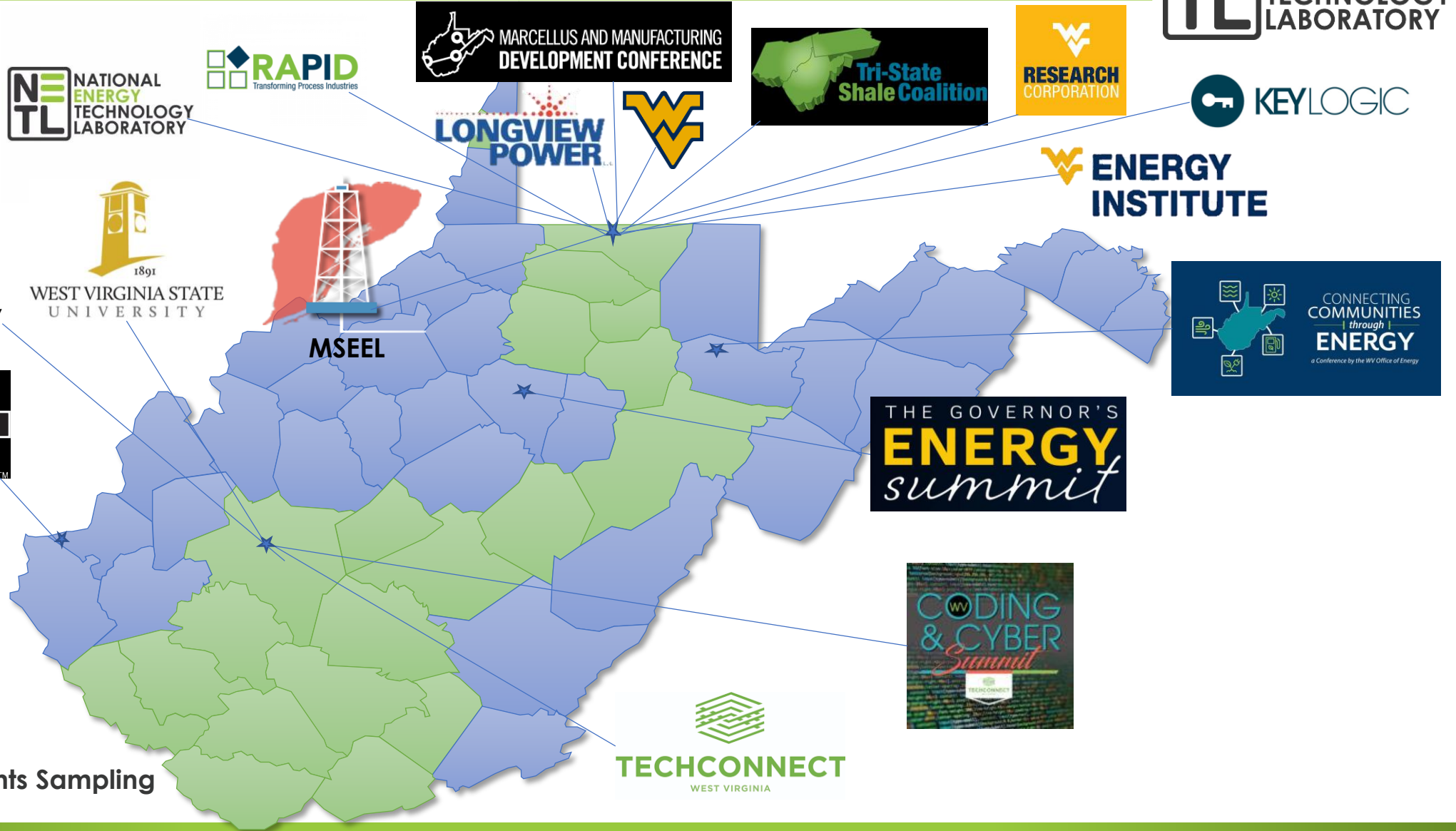
Develop and utilize carbon materials to maximize the value of domestic coal

## NETL Focus Areas

- **Identify** new manufacturing processes for converting coal into high-value products beyond traditional energy markets.
- **Evaluate** costs and technical performance of coal-based materials compared to derivatives of other feedstocks.
- **Characterize** the best markets for coal-based manufacturing and associated barriers.



# NETL and West Virginia Partnerships



 = Rare Earth Elements Sampling