



Shared Laboratories,
Shared Intellect,
Shared Resources

the **ENERGY** lab

NATIONAL ENERGY TECHNOLOGY LABORATORY

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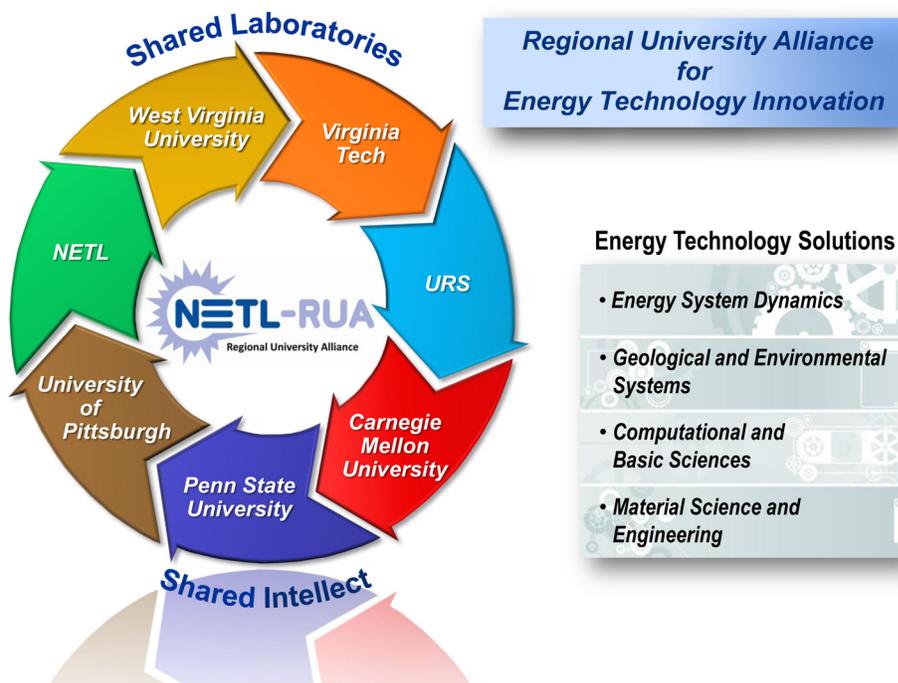
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NETL-Regional University Alliance for Energy Technology Innovation

The National Energy Technology Laboratory (NETL) has formed the Regional University Alliance for Energy Technology Innovation (RUA) in partnership with a consortium of five nationally recognized universities. The University Alliance consists of Carnegie Mellon University, West Virginia University, the University of Pittsburgh, Pennsylvania State University, and Virginia Tech. The RUA research program assists NETL in conducting both basic and applied energy and environmental research programs that support the U.S. Department of Energy's mission to advance U.S. national, economic, and energy security.

Over the coming decades, the Nation's demand for clean, affordable energy will continue to grow, requiring next-generation energy technologies that combine affordability and reliability with long-term environmental stewardship. The well-being of our society requires an energy portfolio that is economically and environmentally acceptable and capable of tapping the full potential of all of our Nation's energy resources. To meet these challenges, and provide a stimulus for high-tech jobs that will spur economic development, we must work with



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the private sector and our academic partners to train the next generation of engineers and scientists, and build the knowledge base through which new innovative strategies and energy technology platforms emerge.

The NETL-RUA research program is organized around several core elements that recognize the enormous systems design and integration issues posed by a global transition of energy technologies over the course of this century. The NETL-RUA will develop next-generation energy technologies and perform key energy-sector analyses that contribute to the development of energy technology roadmaps and the formulation of national energy strategies. Future energy systems designs will seek to reduce the net cost of energy while minimizing environmental impact and carbon intensity, thereby enabling a smooth transition into the U.S. energy portfolio. The NETL-RUA will accelerate technology development to large-scale systems design and demonstration to minimize the time between discovery and technology commercialization. The combination of these elements of research and rapid development within the NETL-RUA research program is critical for leading the transition to advanced energy technologies for the future.

In pursuit of these objectives, NETL and the University Alliance will—

- Focus the high-level scientific research capabilities of the NETL-RUA research program on innovating technologies to meet long-term national energy needs in an environmentally sustainable manner;
- Serve as the nexus of multi-million-dollar shared laboratory facilities and computational capabilities that will play a pivotal role in moving energy transition technologies from discovery to demonstration;
- Promote regional economic development through the generation of spin-off companies and partnerships with regional economic development organizations;
- Educate the energy technology workforce of tomorrow through participation in advanced research and development of educational programs;
- Engage industrial, governmental, academic, and private-sector stakeholders in energy-related collaborations;
- Be a nationally and internationally recognized resource for innovating future energy technologies.

By combining NETL's expertise in fossil-energy technologies with the broad capabilities of the regional universities, the NETL-RUA will support and improve our use of fossil-energy resources as the platform for this century's energy technology transition. Deployment of new technologies

stemming from this Alliance will be aided by key partnerships with the region's commercial energy sector, and will serve as the basis for regional economic development and the nationwide creation of jobs.

With its extraordinary depth and breadth of available expertise, the NETL-RUA is positioned to lead technology development and systems design for this century's energy transition. The region has a long history of leadership in the development of traditional fossil fuels. Commercial nuclear power also had its birth in the region. In addition to having access to NETL's research campuses, the region is home to major electric power-generation facilities, designers and manufacturers of energy systems, and energy-intensive industry sectors, such as steel, aluminum, chemical, and glass. The region is also connected to energy markets for 50% of the U.S. population.

The nationally recognized universities in the RUA have a long and successful history of contributions to energy technologies and the energy industry. The RUA partners have recognized expertise in computational modeling, systems design, and optimization—all key elements needed to integrate renewable energy resources into the U.S. fossil-based energy platform. Furthermore, the regional universities have a 100-year history of collaboration with NETL in support of its fossil-energy mission, in addition to close ties with regional industry leaders.

The NETL-RUA is focused on creating energy solutions through the application of advanced technology and equipping and preparing our energy workforce. Through the NETL-RUA, resources such as professional staff, specialty equipment, and user facilities will be made available for both academic and industrial research. RUA researchers work synergistically with NETL staff in a fully integrated research environment that greatly enhances NETL's on-site research capabilities. This cumulative effort will add significant value to NETL's role of collaborating with industry and other academic institutions on energy technology research, development, and demonstration programs that advance the mission of the Department of Energy. The NETL-RUA is uniquely positioned to facilitate the transition over the coming century to the low-carbon energy technologies of the future. The NETL-RUA provides the framework, commitment, and integration of regional capabilities united with the objective of meeting our Nation's demands for clean, affordable, abundant energy required for energy independence and security.

