

Virginia Tobacco Commission:

Funding Revitalization and Innovation in the Tobacco Region



Research & Development Centers

- A. R&D Center for Advanced Manufacturing and Energy Efficiency
- B. Riverstone Energy Centre
- C. Sustainable Energy Technology Center
- D. Center for Advanced Engineering and Research
- E. Southwest Virginia Clean Energy R&D Center
- F. Appalachia America Energy Research Center

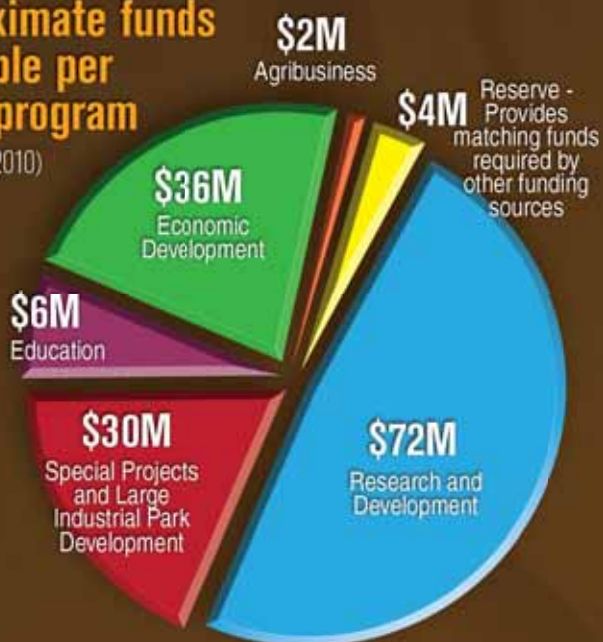
Project Titles of Approved R&D Grants to Date:

- Mid-IR (Infrared) Fiber Optic Research, Development & Commercialization Facility
- Electric Vehicle Supply Equipment Manufacturing
- Intrinery Biomass Torrefaction Research, Development & Commercialization
- Develop Renewable Photovoltaic Energy Technology in Southern Virginia
- Solar Energy Powered Cognitive Air Vehicle
- National Tire Research Center

Tobacco Commission Web Address for more information:
www.tic.virginia.gov

Approximate funds available per grant program

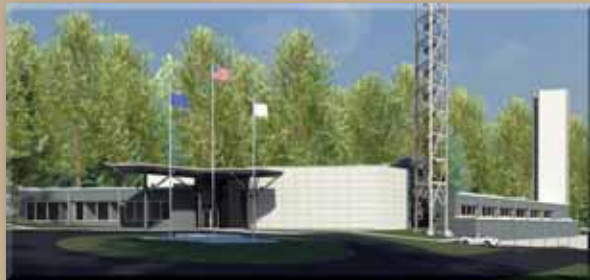
(as of 7/31/2010)



The Center for Advanced Engineering & Research

About the organization

The Center for Advanced Engineering and Research is a nonprofit organization that brings together local industry and universities to conduct research and development projects that are targeted toward generating economic opportunities for Virginia's Region 2000. This new facility will provide space for cutting edge research to be conducted locally. It is our vision that this facility attract the best and brightest researchers from industry and education sectors. The Center will provide convenient and efficient research facilities that foster an atmosphere of collaboration and innovation in nuclear energy and wireless technologies.



About the facility

The two-story facility will provide more than 30,000 square feet of space, with roughly 70 percent dedicated to industry research, 20 percent dedicated to education and community outreach and 10 percent for administrative support. The Center is designed to achieve LEED certification and will occupy about 6-1/2 acres of a 28-acre parcel in the New London Business and Technology Park in Bedford County. The facility is expected to be complete in early 2011.

Research Focus Areas

Center for Safe and Secure Nuclear Energy (CSSNE)

- Advanced control room monitoring technology and Human Machine Interface
- Technologies for improved safe and secure operation of nuclear power plants
- High performance modeling and simulation of nuclear power plant processes
- Assessment and design of new digital technologies for instrumentation and control

Inspection, Testing and Analysis Technologies

- Nondestructive Evaluation
- Inspection Technologies
- Materials Analysis
- Advanced Manufacturing Processes
- Plant Chemistry/Corrosion

Sensors, Controls and Wireless Technologies for Energy Production and Transmission

- Sensor Technologies
- Wireless Networks
- Wireless Communications

Cognitive Radio (CR) Research

- Dynamic Spectrum Analysis – detecting unused RF spectrum and sharing it
- Self Organizing Networks – capturing the best available spectrum to meet user requirements
- Cognitive Jamming Networks
- Smart Antenna

Key elements of the facility

- Fully configurable nuclear power plant control room simulator
- High-performance computing capability and supporting, connected visualization lab to support the development of three-dimensional simulation models of plant operations
- Six 20 ft x 32 ft research labs plus one 60 x 32 ft high bay lab
- Support space for up to eight research faculty and 16 research assistants
- Cognitive radio test room and 100 foot antenna tower
- A "Science Made Visible" design theme



**The Center for Advanced
Engineering & Research**

Bob Bailey, Executive Director

Email: bbailey@caer.us

Phone: 434.847.1447

www.caer.us



Sustainable Energy Technology Center (SEnTeC)

Biofuel Plants from the Lab to the Fields



25,000 square foot facility designed to achieve LEED certification

The design of the SEnTeC facility includes:

- Commercial size micro-biorefinery units that are capable of converting cellulosic plant material (biomass), into biofuels and bioproducts
- Large pilot plant area for large scale development work
- Research Laboratory Support: Analytical Support Lab, Cell Wall Analytical Chemistry, Cell Culture (Plant/Microbial), Microscopy/Imaging and Walk-in Environmental room

SEnTeC, a research and development (R&D) emphasis area for the Institute for Advanced Learning and Research, will conduct R&D projects that are directed toward the development and introduction of biomass crops, assessment of conversion technologies, development of co-products from conversion processes and feasibility studies for inserting bio-refineries into Southern Virginia. Management of the SEnTeC enterprise is directed toward technology transfer and associated commercialization. The model being developed for SEnTeC will be a unique combination of two successful business R&D models that are already being practiced – the Contract Research Organization and the Industry/University Research program. It is envisioned that the combination of the two will enable SEnTeC to be the regional asset for the development of renewable energy and bioproducts industry located in Southern Virginia. For more details about SEnTeC and this management structure visit our website.

Construction of SEnTeC began this fall.

Opportunities are available for you to become an industry or academic partner.

Go to www.ialr.org/sentec-va to find out more.
Institute for Advanced Learning and Research
150 Slayton Avenue, Danville, VA 24540



Riverstone Energy Centre & R&D Center for Advanced Manufacturing & Energy Efficiency

Taking Your Idea from Conception to Commercialization

Collaboration—it's what we do and who we are.

The Riverstone Energy Centre (REC) and R&D Center for Advanced Manufacturing & Energy Efficiency work collaboratively to provide a complete, unparalleled, competitively priced package of services for your product and process development needs. We work with you to provide your firm with the resources to solve your product design dilemmas, assist you in creating new products and components, and lower your manufacturing costs through technological efficiencies. While other R&D firms provide research alone, the Riverstone Energy Centre and the R&D Center for Advanced Manufacturing & Energy Efficiency gives you the competitive and technological edge you need to rise above the competition.

Located in South Boston, Virginia, the **Riverstone Energy Centre** and the **R&D Center for Advanced Manufacturing & Energy Efficiency** provide innovative solutions for firms seeking resources to pursue consistent research, or who struggle to implement the innovations research has discovered.

The Riverstone Energy Centre is a 7,000 square foot facility housed in the larger 62,000 square foot Riverstone Centre. At the heart of REC is the Mechdyne Flex Virtual Reality system. "The Cave," as the system has been coined, is a powerful 3D virtual reality environment that provides unparalleled modeling and simulation capabilities. Coupled with the Cisco 3000 Telepresence videoconference equipment, you will have the ability to create the world you want and to share it without being limited by geographic boundaries. A meeting with customers around the world becomes as real and as vibrant as a meeting around the table. Additionally, REC has a multimedia center capable of producing sophisticated audio, visual, and print materials that will allow you to tell your story to government, industry, and clients alike.

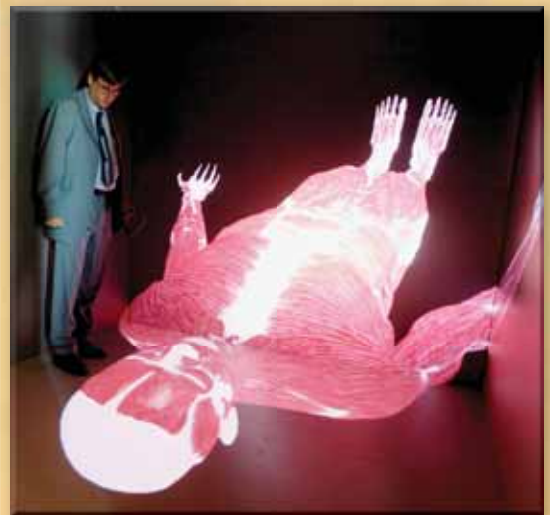


The **R&D Center for Advanced Manufacturing & Energy Efficiency** is located in the Innovation Center—a 46,000 square foot, newly renovated, former tobacco warehouse operated by the Southern Virginia Higher Education Center. This facility houses a state-of-the-art Machining Center equipped with today's most advanced and progressive manufacturing technology that will produce products in both the 3-axis and the 5-axis realm. Because we know advanced manufacturing techniques are the key to competing globally, we use a "Smart Factory" approach to demonstrate how emerging trends in industry and advanced technology can be adopted and mastered.

little r, BIG D

Research-based "new knowledge" contributes to more competitive local, regional, and national economies. But research alone isn't enough to make this happen. Development – product and process development – is required to find practical, meaningful uses of research discoveries. That's what we do.

We focus on helping companies harness the power of research by finding business-enhancing practical applications that will strengthen your bottom line. All of our research is in the pursuit of the singular goal of making your company a more nimble, vigorous, and technologically competitive concern. Using progressive techniques, including establishing technology best practices and demonstrating their cost effectiveness, we use applied research to improve your ability to develop new commercially viable products. Let our research (little r), drive your commercial development (big D).





Proof of Concept

With us, costly and time-consuming manufacturing dilemmas that only manifest themselves at the production stage are a thing of the past. Working collaboratively, the Riverstone Energy Centre and the R&D Center for Advanced Manufacturing & Energy Efficiency use process models where research and its path to commercialization are primarily determined through proof-of-concept prototype activities. Our computer labs are loaded with a suite of engineering and design software, including robust integrated CAD/CAM software that allows us to design your product or process, to create a working model, and to test it out in the cost-controlled lab. We can then advance a theory by using Modeling and Simulation to create a virtual world where we test every element of your concept. We give you the solutions to problems your competitors don't even know exist.



We can take you across the R&D “valley of death.”

The treacherous trip from research to development to market is simpler and safer when we are your guides. With a suite of services from consultancy to proof-of-concept to commercialization, we will take your idea from conception to commercialization and provide you with the tools you need to thrive in the global market.



After we've worked together to develop a commercially viable product, we'll go one step further and assist you in collaborating with the Halifax County Industrial Development Authority. The Authority will not only help you produce your product in Halifax County, but will also assist you with financial incentives that can get your production started. From the creation of a design through establishment of production facilities, Halifax has the assets you need to get going quickly in a low cost environment.

Let's get started:

R&D Center for Advanced Manufacturing & Energy Efficiency: 434-572-5557 or 1-800-283-0098 ext 5557

Riverstone Energy Centre: 434-572-1734

Halifax County Industrial Authority: 434-572-1734

Clean Energy Research & Development Center

Washington County, VA

The mission of the Clean Energy Research & Development Center ("CERD") is to help transform energy technologies into wealth and prosperity in southwest Virginia.

We seek and encourage innovations in both conventional and alternative energy. We generate deal flow by maintaining contacts with industry, academia and other referral sources, and by keeping our eyes and ears open. During due diligence review we look for strong business models that are understandable, profit-driven, and not dependent on long-term government subsidies. Ideally the opportunities will be synergistic with existing southwest Virginia natural, institutional, and human resources.



When we identify promising technologies we work as needed to connect them with talented people and capital in the region.

Our work and areas of interest include:

- Conversion of lignocellulosic biomass (e.g., sawdust, wood chips, switchgrass) to ethanol and high-value co-products
- Waste-to-energy, such as upgrading methane-containing landfill gas to pipeline-quality natural gas
- Development of a regional natural gas transportation industry cluster
- Beneficial R&D for the coal industry, including algae fuel production using CO₂ produced at coal-fired power plants
- District energy solutions for industrial parks, business parks, data centers, small colleges and other large energy consumers
- Water and its relationship to energy

CERD also seeks to create effective mechanisms to deploy risk capital with early-stage energy technology companies and small-scale energy project finance in the Tobacco Region.

CERD's home is the 14,000 square foot Energy Field Lab being built in Washington County, VA. The building's design incorporates many sustainable features including geothermal, passive solar and rain water collection. We will measure building energy consumption and generation, and display the data on screens in the building and on our website. Space is available for academic and industrial energy-related research.

Contact us to explore how we can help your energy project.

Contact:

Edwin O. Rogers, Director
Clean Energy Research & Development Center
One Partnership Drive, P.O. Box 1987
Abingdon, VA 24212
Phone: 276-619-4396
Fax: 276-619-4309
erogers@swcenter.edu
www.energyfieldlab.com

Appalachia America Energy Research Center (AAERC)

The future has come to Wise County.

About the AAERC

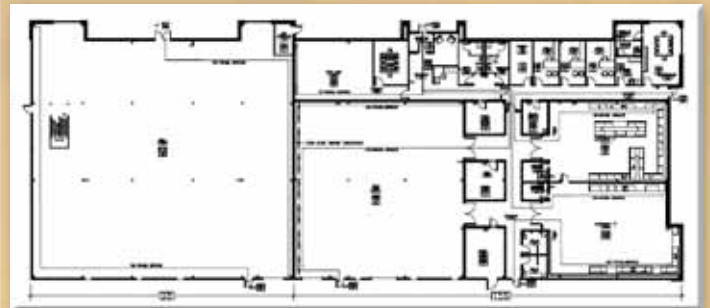
The mission of Appalachia America Energy Research Center (AAERC) is to maximize existing energy resources and support the commercialization of new energy technologies for the benefit of creating jobs in the Southwest Virginia region, primarily through formation and stewardship of new start-up companies tied to the commercialization of well-vetted breakthrough energy technologies.



The incubation of small energy oriented start-ups with commercially viable technologies will support a larger network of suppliers and services in the region. To promote this mission the Appalachia America Energy Research Center has been working with independent organizations, individual inventors, student groups and private companies since January 2010 as the first clean energy incubator in Southwest Virginia.

The Appalachia America Energy Research Center is:

- Developing partnerships between Federal, Commonwealth and Municipal governments, military, non-profit, corporate & academic interests;
- Cultivating and assessing intellectual property (IP) in technology categories within the scope of the center and accelerating the emergence of viable new energy startup businesses with that IP;
- Preparing these energy startup businesses to launch, operate, grow and stabilize with significant emphasis given to retaining these businesses in the region;
- Developing programs and ongoing activities in concert with a world class Management Advisory Board that includes former Virginia governor George Allen, Terry McAuliffe, Honorable Virginia Delegate Terry Kilgore, and Don Green.



Contact Information

AAERC

5934 Windswept Boulevard
Lonesome Pine Regional Business and Technology Park
Wise, Virginia 24293

Kenny Gilley, Chair
Wise County Industrial Development Authority
PO Box 570
Wise, Virginia 24293
kgilley@s-west.com
276.328.2321



The Virginia Tobacco Commission

In 1999, the Governor and the General Assembly created the Commission to: (ii) revitalize the economies of tobacco-dependent regions (the "Region"). Per the Code of Virginia, the Commission is empowered to determine the appropriate use of, and recipients of, monies allocated to the Commission by the Virginia General Assembly. The Commission has determined that applied research with significant commercialization potential in the tobacco-dependent region is a key element of revitalization and seeks to provide grant funding to selected entities in Virginia engaged in such work.

Program guidelines adopted by the Commission are intended to attract entities who propose to:

- engage in applied research that is post proof-of-concept
- pursue commercialization within 36 months
- invent and/or improve products, processes, or services that originate and remain in the Region (highest priority), or whose value is substantially increased in the Region (lower priority)
- provide to the Commission, or its designee, intellectual property rights ("IP") commensurate with its contribution to the project.
- conduct research and development in the following areas:

Energy (of primary interest to the Commission)

Biomedical and Health Care

Information Technology

Chemical and Materials

Environmental

Non-Commission Funding Sources

Applications that describe substantial, reliable, and secure funding sources in addition to those requested from the Commission will be given priority over those that do not. The Commission has indicated its intent to fund not more than 50% of any given project.

Eligible Applicants

Applications will be accepted from public or private entities, such as:

- The governing body of a Virginia city, county, town or industrial development authority.
- A private, non-profit entity, properly constituted in Virginia under IRS 501(c).
- An education or training institution physically located in Virginia.
- Entities not constituted in Virginia but with significant, enduring investments in the Region.
- A for-profit entity may apply if joined by a non-profit or governmental entity as co-applicant AND the for-profit entity enters into an agreement with the Commission to create jobs and investments in the Region.
- Multiple-entity applications must be accompanied by a partnership agreement defining the relationship between the partners relative to the project and its associated revenue, expense, assets, and liabilities.

Applications

Applications may be submitted at any time. Go to the Research and Development page on the Tobacco Commission website for the complete Guidelines, Instructions and Application: <http://www.tic.virginia.gov/researchanddevelopment.shtml#>

Application Review Process

Applications will be screened by Commission Staff and presented to a Commission sub-committee for further assignment to an external Review Panel. The external Review Panel process is managed by the Virginia Economic Development Partnership, the lead economic development agency for the Commonwealth of Virginia, which is responsible to convene panelists with technical, academic and industry knowledge to review and summarize the scientific and commercial viability of the applications to the sub-committee for its use in making final recommendations to the Commission, which makes the final grant award decisions.

The external Review Panel will assess the following aspects of each application:

- adequacy of proof of concept
- technical development stage
- credentials of applicant team
- competing technologies
- project milestone definition
- scalability to commercial production
- intellectual property rights
- market availability and depth
- pathway to commercialization
- adequacy of applicant resources

Contact

Neal E. Noyes, Executive Director 804-225-2027 Neal.Noyes@tic.virginia.gov www.tic.virginia.gov