CapitalBudgetRequest

Agricultural Research and Extension Center Improvements - Southern Piedmont	
Overview	
Agency	Virginia Cooperative Extension and Agricultural Experiment Station (229)
Project Code	none
Project Type	New Construction/Improvement
Biennium	2024-2026
Budget Round	Amended Bill
Bill Version	Regular Session
Request Type	Previously Submitted
Project Location	South Piedmont
Facility/Campus	Southern Piedmont AREC
Source of Request	Agency Request
Infrastructure Element	Agricultural Facility
Contains O & M costs? Yes	
Contains significant technology costs? No	
Contains significant energy costs? No	
Possible that project will be used by other than a state or local governmental entity, or for research under sponsored programs (higher education)? No	

Agency Narrative

Agency Description

Executive Summary:

The Commonwealth's private agriculture industry accounts for one in every five jobs in Virginia, generating more than 381,800 jobs in the Commonwealth, and creating an economic impact of $82.3 billion annually. The industries of agriculture and forestry together have a total economic impact of over $105 billion and provide more than 490,000 jobs in the Commonwealth. Every job in agriculture and forestry supports 1.6 jobs elsewhere in Virginia's economy.

The Virginia Tech Cooperative Extension/Agricultural Experiment Station agency, Agency 229, impacts are vast, diverse, and touch every sector of Virginia's agriculture and forestry economy. The innovative and applied research, education and training, and direct assistance provided to Virginians by Agency 229 have led to nationwide recognition of Virginia as a producer of superior agricultural products, better business management practices, and environmental stewardship that improves quality of life for all Virginians.

This agency is the Commonwealth's most substantial and wide-reaching source for production and operation research to advance and protect a multitude of industries in the state. Agency 229 activity creates jobs, promotes new investments, produces a new generation of leaders in agriculture and natural resources, and helps to grow Virginia's critically important exports of agricultural commodities and forest products.

The agency includes 11 sites dispersed throughout the Commonwealth. The sites are known collectively as Agriculture Research and Extension Centers (ARECs), and each focus on industries particular to a geographic location. This request focuses on the Southern Piedmont AREC. The faculty of the Southern Piedmont AREC focus on research programs that enhance the economic impact of tobacco, forage crops, beef cattle, small fruit, and specialty crops, all of which are leading components of the agricultural industry and the Commonwealth's economy.

The facilities at the Southern Piedmont AREC are outdated, too small, and have accumulated more deferred maintenance than can be addressed with repairs or renovations. Modern research facilities are needed to continue the research and outreach expected by the Commonwealth's agricultural businesses.

The Southern Piedmont AREC Improvements project seeks $9.44 million to renew 7,600 GSF of aging and deteriorating facilities and construct 19,000 GSF of modern facilities at the Southern Piedmont AREC. The current programs and economic impact of this AREC is described in the

Program Description section below.

Project Description:

Each AREC requires specific infrastructure to conduct its research and outreach, including facilities, utilities, and equipment. This project will address the top priority infrastructure and renovation needs for the Southern Piedmont AREC.

With an estimated 15,000 hours of in-person contacts in 2022, this AREC is a major contributor to stakeholder and community engagement priority set by the College of Agriculture and Life Sciences and Virginia Tech. SPAREC has hired several new faculty and invested in new farming and research equipment. However, investments to update the existing old research and farm facilities, build new laboratories, and other operational necessities are urgently needed to maintain and maximize our effectiveness in confronting these challenges. Some of these critical facilities included in the subproject scope include:

- Laboratory and plant growth facilities: The current four laboratories in SPAREC were established in 1984 and are in dire need of renovation. In addition to the much-needed laboratory renovations (2,700 GSF), three new laboratories (3,000 GSF total) with office settings are needed in order to host lab employees. As the programs have several ultra-low temperature freezers, a backup generator is necessary to retain the stored samples' quality.

- AREC Support Services Complex: In recent years SPAREC has been purchasing new equipment and machinery, and there is a growing need for a building with conditioned space for staff and adequate storage space for heavy equipment. This 10,000 GSF facility fully enclosed pre-engineered multi-purpose building should be accompanied by three feed storage bins.

- Greenhouse space: Existing greenhouses continue to age and deteriorate as several are beyond their useful lifespan. Building 0898 (4,900 GSF), consisting of a headhouse and two greenhouse wings needs capital renewal including a major upgrade to its heating/cooling systems, irrigation, lighting, and chemical application systems. Further, a new smart greenhouse (3,000 GSF) is necessary to study plants in advanced growing conditions and climate change.

In summary, the collective items above represent an overall strategy to improve top-priority projects across the Commonwealth’s AREC facilities and sites, over time bringing the system fully up to current standards and providing room for growth in new areas of study. New facilities will be flexible and open to the fullest extent for maximum configurability and to meet the future needs of the AREC and the Commonwealth. In total, this project includes the renovation and construction of research and programmatic facilities at its site in Blackstone, Virginia that total approximately 26,600 gross square feet.

Justification

Program Description:

The Virginia General Assembly established the Virginia Agricultural Experiment Station (VAES) on March 1, 1886, in anticipation of the Federal Hatch Act of 1887, which created a network of state agricultural experiment stations nationwide as part of the land-grant higher education mission. This system links experiment station research to cooperative extension programs and college academic programs. The State Agricultural Experiment Stations were charged with conducting research and development projects on behalf of farmers, in forestry, animal health and disease, and multistate research programs.

The mission of the Agricultural Research and Extension Center (AREC) system is to utilize innovative research techniques to discover new scientific knowledge and create and disseminate practical applications that ensure the wise use of agricultural, natural, and community resources. Research is designed to provide knowledge that will enhance the quality of individual and family life and the social and economic vigor of Virginia. Researchers utilize qualitative and quantitative research methods to expand the knowledge base and to further the mission of the land-grant university. The expertise gained from this research is broadly applied to improve Virginia's animal, plant, and seafood harvest industries while conserving natural resources, which ultimately benefits all citizens of the Commonwealth.

Faculty and staff deliver research and extension programs at these widely dispersed sites across the Commonwealth, to take advantage of the unique agricultural characteristics and challenges found in each location.

Today, VAES research projects and activities encompass the work of more than 350 scientists in five colleges at Virginia Tech: College of Agriculture and Life Sciences, College of Natural Resources and Environment, College of Liberal Arts and Human Sciences, College of Science, and Virginia-Maryland College of Veterinary Medicine. The VAES research network also includes 11 field stations located throughout the state. Known as Agricultural Research and Extension Centers (ARECs), these field stations emphasize the close working relationships between the Virginia Agricultural Experiment Station and Virginia Cooperative Extension.

VAES research directly supports agriculture, the state’s largest private industry, accounting for one in every five jobs, providing an economic impact of $82.3 billion annually, generating more than 381,800 jobs in the Commonwealth, and creating $43.8 billion in value-added impact.

The existing AREC facilities do not support the demand for the program activities and require improvements and expansion. This project will help bring the Southern Piedmont AREC up-to-date and provide the capacity to meet client demand for services. Every AREC has minimum requirements to meet the basic needs of research/support, extension/outreach, housing, and infrastructure. This project will address those

minimum requirements and work towards maintaining and enhancing productivity, research output, and community engagement that the Southern Piedmont AREC is designed for. Improved ARECs are also essential for the new Center for Advanced Innovation in Agriculture, which is establishing Virginia Tech as a comprehensive and innovative global research leader in smart and secure agriculture technologies and data analytics for informed decisions.

Southern Piedmont AREC:

The Southern Piedmont AREC near Blackstone, Virginia was established in 1974 and conducts strong commodity-oriented research and Extension programs to provide information and technology to the agricultural industry. Programs enhance the economic viability and environmental stewardship of tobacco, forage crops, beef cattle, small fruit, and other field and specialty crops.

The SPAREC is situated on a 1,180-acre farm with 130 acres of crop research plots, 120 acres of research grazing, and a 40-acre pasture area. It also includes specialized tobacco curing facilities, laboratories, extensive greenhouse facilities and high tunnels, and a 150-person auditorium. Current disciplines at the SPAREC include Tobacco agronomy, tobacco curing technology and efficiency, tobacco disease management, forage production and management, ruminant livestock, and small fruit disease management. The following innovative technologies are currently utilized at the SPAREC: Tobacco curing, monitoring, and automation, sucker control application technologies, and drones to assess crop development.

- Industry Partners currently working with the SPAREC include:
- Tobacco industry and growers
- Agrichemical industry
- Forage and livestock industry
- Virginia Farm Bureau, SWCD, NRCS, VDACS

Strategically located in Virginia's Southern Piedmont region, the SPAREC is a hub to conduct innovative and cutting-edge research and discovery, educate, and disseminate information to improve agricultural productivity and preserve natural and community resources. SPAREC's overarching initiative to address regional stakeholder needs is developing resilient, profitable, and sustainable production systems. Effective integration of the region's tobacco, soybean, livestock, and timber production can lead to economic prosperity and enhance the quality of life of Virginians, especially those in the region with > 35% underrepresented population. In recent years, significant investments have been made to recruit new faculty, researchers, and graduate and undergraduate students and to obtain state-of-the-art equipment to facilitate research and outreach; the limited and aging infrastructures remain a significant constraint to the further growth of the AREC.

The SPAREC is the only AREC in Virginia that conducts research and provides recommendations on all aspects of best management practices to tobacco producers who have experienced unprecedented challenges to profitability. This service has been instrumental in retaining tobacco as a top commodity in Virginia, with $215 million in exports in 2022. While our research and extension activities in applied forage have been engaging regional livestock producers, SPAREC's effort in integrating trees and livestock grazing (known as silvopasture) is not only contributing to the preservation of natural resources but also to Virginia's livestock, hay, and forestry production, valued at more than $1.5 billion in exports and cash receipts in 2022 (VDACS, 2022). The ongoing research and outreach efforts on specialty crops, crop rotations, and pest and disease management are geared toward maximizing farmers' profitability and generating opportunities for small-acreage producers to succeed. The SPAREC is also a regional leader in community engagement and agritourism support by organizing regionwide events to showcase research activities, farm operations, and laboratory facilities to the general public and a wide range of partners (~3,000 visitors in 2022). The SPAREC's diverse programs provide ample opportunities for training the next generation of agricultural educators and practitioners to serve the Commonwealth of Virginia.

Strategic Planning:

The university’s strategic plan includes the following goals and objectives that will be supported by this project:
- Increase extramural research expenditures.
- Achieve top US public land-grant ranking.
- Increase graduate student enrollment.
- Advance the rural Virginia initiative.
- Increase and sustain excellence in research, discovery, and creativity.
- Increase institutional impact and visibility.
- Increase representational diversity, cultural competency, and address critical societal issues impacting humanity and equity.
- Attract, retain, and develop the talents of students, faculty, and staff prepared to serve both the local and global communities while also supporting lifelong engagement and learning.
- Continue to develop the physical campus and technology infrastructure.

Existing Facilities:

This project will help bring the Southern Piedmont AREC up-to-date and provide capacity to meet client demand for services. The existing research laboratories and support facilities are in poor condition, have reached their functional life expectancy, are no longer ideal for conducting experiments required to respond to modern agricultural issues, and cannot support demand for the program activities. The SPAREC

has inadequate means to meet safety requirements, conduct appropriate experiments, and support their ongoing research and extension programs.

Although they are still used as laboratory and office space because of current space limitations, structures at the AREC have reached their functional life expectancy and present concerns in safety and research efficacy. Laboratory spaces in these buildings are also outdated and do not provide the functionality needed to support modern laboratory and fieldwork in their respective agricultural sciences. Additionally, greenhouse space is imperative to carrying out VAES objectives. Controlled environment growth facilities are a critical component of both research programs. Having state-of-the-art plant growing facilities is necessary for researchers to remain current with industry partners and find innovative solutions to current world problems.

Funding Plan:

The program for this project is 100 percent Educational and General for the Agricultural Research and Extension Center Improvements project; thus, the funding plan calls for 100 percent General Fund support for this $9.44 million project. If full construction authorization is not feasible at this time, then the university will seek a planning authorization in order to begin the process of acknowledging and modernizing the AREC facilities.

Options Considered:

Options considered and not selected include elimination or reduction of the research programs and deferring the project to a future biennium. Elimination or reduction of the program is not feasible because of the significant negative impact to the program's support to industry and government. Deferring the project is not recommended because the facilities are no longer in a position to adequately support the research programs.

Methodology

Cost Explanation and Methodology:

A. Methods Used to Estimate Costs:

The method for estimating costs for the Agricultural Research and Extension Center Improvements project includes: 1) using unit costs in the Division of Engineering and Building's Construction Costs Database updated July 2024 with a regional market multiplier and a multiplier for soft costs; and 2) comparable university historical costs as shown in the CR-1; 3) cost data from the College based upon site specific knowledge through the Renovation process. These methods are escalated to a construction midpoint of 2028 in accordance with the instructions for developing the Six-Year Capital Outlay Plan and the rate utilized in the most recent CR-1 Project Planning form.

On a total project cost basis, inclusive of design, construction, and equipment, the unit costs are $355 per gross square foot. The unit construction costs of the project are $267 per gross square foot. The building types in this request include portions of wet laboratory, dry laboratory, and office in the Division of Engineering and Building's Virginia Construction Costs Database. The costs also include barns, equipment storage, and feed storage spaces.

Design-Bid-Build is the intended delivery method for this project.

SPAREC's geographic location will require DEQ permitting. These increased soft costs for DEQ-related expenses have been incorporated into the project budget.

Funding Request

Phase	Year	Subobject	Fund	Agency Request
Full Funding	2026	2411 - Unallotted Capital Amount	01000 - General Fund	$9,440,000
			Total	$9,440,000

Project Costs

Cost Type	Requested Funding
Acquisition Cost	$0
Building & Built-in Equipment	$7,090,027
Sitework & Utility Construction	$0
Construction Cost Total	**$7,090,027**
DESIGN & RELATED SERVICE ITEMS	

A/E Basic Services	$443,949
A/E Reimbursables	$4,296
Specialty Consultants (Food Service, Acoustics, etc.)	$9,309
CM Design Phase Services	$10,741
Subsurface Investigations (Geotech, Soil Borings)	$37,234
Land Survey	$2,148
Archeological Survey	$0
Hazmat Survey & Design	$143
Value Engineering Services	$12,889
Cost Estimating Services	$2,148
Other Design & Related Services	$35,086
Design & Related Services Total	**$557,943**
INSPECTION & TESTING SERVICE ITEMS	
Project Inspection Services (inhouse or consultant)	$185,456
Project Testing Services (conc., steel, roofing, etc.)	$52,987
Inspection & Testing Services Total	**$238,443**
PROJECT MANAGEMENT & OTHER COST ITEMS	
Project Management (inhouse or consultant)	$178,342
Work By Owner	$42,247
BCOM Services	$2,864
Advertisements	$4,296
Printing & Reproduction	$4,296
Moving & Relocation Expenses	$2,864
A/V Cabling	$0
IT Cabling	$0
Telephone Cabling	$0
A/V Equipment	$0
IT Equipment	$71,605
Telephone Equipment	$0
Signage	$21,481
Demolition	$0
Hazardous Material Abatement	$716
Utility Connection Fees	$36
Utility Relocations	$2,148
Commissioning	$40,099
Miscellaneous Other Costs	$159,678
Project Management & Other Costs Total	**$530,672**
Furnishings & Movable Equipment	$673,150
Construction Contingency	$349,765
TOTAL PROJECT COST	**$9,440,000**

Size and Scope

Cost Type	Cost	Unit of Measure	Units	Cost Per Unit
Acquisition Cost			0	$0
Construction Cost	$9,440,000	GSF	26,600	$355
New Construction Cost			0	$0
Improvement Cost			0	$0

Operating and Maintenance Costs

Cost Type	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030

GF Dollars	$0	$0	$0	$298,967	$310,925	$323,362
NGF Dollars	$0	$0	$0	$0	$0	$0
GF Positions	0.00	0.00	0.00	2.34	2.34	2.34
NGF Positions	0.00	0.00	0.00	0.00	0.00	0.00
GF Transfer	$0	$0	$0	$0	$0	$0
GF Revenue	$0	$0	$0	$0	$0	$0
Layoffs	0	0	0	0	0	0

Planned start date of new O&M costs (if different than the beginning of the fiscal year):---

Supporting Documents

File Name	File Size	Uploaded By	Upload Date	Comment
S. Piedmont AREC Program Chart.pdf	78,934	Matthew Digman	8/23/2024	
+CR-1 SP AREC 8.21.24.xlsx	1,789,932	Rob Mann	8/23/2024	