Trends

No Data Available

Legend:
Increase, Decrease, Steady

Key Performance Areas

No Data Available

Productivity

No Data Available

Legend:
Improving, Worsening, Maintaining

For more information on administrative key, and productivity measures, go to www.vaperforms.virginia.gov/agencylevel/index.cfm

EXECUTIVE PROGRESS REPORT March 2014

Background & History

The Institute for Advanced Learning & Research (IALR) is a multi-function agency that engages in research and development (R&D) that contributes to economic development within the region, and delivers high quality educational and outreach opportunities for the residents of the agency's large footprint (Danville City, Franklin County, Halifax County, Henry County, Martinsville City, Pittsylvania County, and Mecklenburg County).

Within the IALR, and jointly affiliated with Virginia Tech's Departments of Horticulture and Forestry, is the Institute for Sustainable and Renewable Resources (ISRR). The ISRR has brought together expertise in plant tissue culture, plant molecular biology, genomics, molecular breeding and information technology to facilitate the development and propagation of novel ornamental, crop and forestry plant varieties.

New product development includes a daylily breeding program for enhanced color and pest resistance, tomato breeding for enhanced nutritional content, enhancement of Pennycress seed oil content for biofuel use, and the enhancement of turf grass using beneficial, natural bacteria.

The IALR is also emphasizing applied polymer science to provide commercial value to both internal and external suppliers and users of polymeric materials. ISO (International Organization for Standardization) certification for the agency's Analytical Chemistry Lab was achieved in early CY2013.

The IALR connects students with advancements in Science, Technology, Engineering, and Mathematics (STEM) through our STEM Mobile Learning Lab - a virtual lab on wheels. The delivery method of providing a hands-on minds-on learning experience is uniquely designed to support education and outreach in rural Virginia by sharing equipment, technology, and other resources with K-12 school divisions. Designed to demonstrate advances in STEM research, the Mobile Lab houses a work station, high resolution microscopes, a movie screen, a large assortment of hands-on learning supplies, and a sterile “clean” area for experiments.

Primary Product & Services

STEM Outreach: The agency provides science, technology, engineering and mathematics (STEM) outreach programs for K-12 and community college students, and continuing educational opportunities for teachers.

Commercial Plant Sales: The agency's commercial spin-off, the Dan River Plant Propagation Center (DRPPC), produced the VT Spirit triploid daylily and the Lady Astor Rose. Danville adopted the Lady Astor Rose as the official City Flower and is planting it in beds throughout the City. The DRPPC is collaborating with local tobacco farmers to enable them to benefit from this commercialized entity.

Analytical Chemistry: This Lab will be restricted and used primarily for contracted work for companies requiring ISO (International Organization for Standardization) certified test results.

Energy Center: The Sustainable Energy Technology Center (SENTEC), one of five such energy centers in the Commonwealth, is a regional asset for the development of alternative energy. The Center's first tenant, Virdia, occupies the entire frst floor and is a leading developer of extraction technologies for conversion of cellulosic biomass to highly refined fermentable sugars and high quality lignin.

Process Intensification Research Center: Evaluations of specialized equipment enabling manufacturing process determinations to be made on a small scale have been successfully completed. The agency will provide consultative services on a fee for service basis and will also create a collaborative partnership to develop the Center.

Bio-based Products: The bio-based products sector contains two important economic engines for rural America: agriculture and

manufacturing. Bio-based products include biopolymers, key ingredients used in the manufacture of plastics. A survey of Southern Virginia polymer companies identified a need for support in the evaluation of novel chemicals, manufacturing processes and product design, including biopolymer R&D. The agency is positioning itself to provide the assistance needed.

Customer Base

The Institute for Advanced Learning & Research (IALR) plans to develop intergenerational educational programs that provide opportunities for a continuum of learning. The development of lifelong learning programs for older adults is especially important to address the “Age Wave” demographic shift identified in the Council on Aging 2011 annual report. The report stated “the number of Virginians over the age of sixty will increase from 1.4 million (17.8% of population) in 2010 to 2.3 million (23.9%) in 2030.”

Science, technology, engineering and mathematics (STEM) interest is increasing regionally as well as on a state and national level. The IALR has upgraded technology in the STEM Mobile Lab and is planning on an expansion of the Mobile Lab to enable a greater number of students in the Lab at any given time. The STEM Mobile Learning Lab allows us to reach our service region and beyond, while providing learning opportunities for individuals of all ages.

The IALR's contribution to economic revitalization in the region will continue to focus on partnerships, collaborative projects, and intern opportunities with area businesses, colleges, and school systems. During FY2012 IALR's efforts increased the economy in the area by $10M in capital expenditures and first year salaries.

The City of Danville saw a small decrease in the number of business licenses issued in FY2012 but is experiencing a modest increase during FY2013. The IALR is optimistic this increase will continue and plans to intensify outreach to business customers by providing creative and engaging opportunities. The IALR is also completing an assessment of area businesses to identify opportunities for providing technical and research resources that may otherwise not be available to smaller companies.

The challenge confronting the IALR is encompassing the diversity of customers within our expansive footprint.

Customer Listing

No Data Available

Key Agency Statistics

The Institute for Advanced Learning & Research (IALR) has two distinct pathways as indicated by our name: advanced learning and research.

We devoted $5 million in FY 2012 to research, development and commercialization, primarily in horticulture and bioenergy. Although the IALR’s commercial plant propagation center is still in its infancy stage, the potential for a positive impact to the region is significant. Plans are to engage local farmers who already have greenhouses, land and needed equipment.

The Sustainable Energy and Technology Center (SENTEC) opened in April 2012. To date the IALR’s tenant has generated 38 new jobs with the majority of the employees being hired from the local workforce pool.

A highly educated workforce is critical to any area’s economic development. The IALR is committed to partnering with businesses, colleges, and school systems to provide encouragement and opportunities that foster education, especially in science, technology, engineering and mathematics (STEM) fields.

Another important factor needed for improving economic development is an affordable, high technology focused meeting location in close proximity to area businesses. The IALR’s conference center satisfies this need.

Finances

The Institute for Advanced Learning & Research (IALR) worked with legislators to obtain a total of $12,246,544 in funds over the next biennium to invest in program areas that would enable us to build capacity and use that capacity to provide support to regional manufacturers and obtain grants and contract funding. With IALR's focus on the regional manufacturing cluster represented by

chemical and plastic manufacturers, $600,000 for each year will be used specifically for polymers and chemistry research and development (R&D).

State appropriated funding is supplemented with grants and contract revenue obtained from various sources. The Tobacco Commission, a long-time supporter of Institute programs, recently approved new awards totaling $1,800,000.00. IALR has teamed with ProteiosBio on a $1,290,560 grant focusing on Commercialization of Protein Products. Development of the Giant Reed (*Arundo donax*) as a Biofuel Crop for Southern Virginia netted an additional $521,298 grant focusing on Commercialization of Plants for Conversion into Bioproducts. This new project on Arundo donax was initiated in collaboration with Chemtex, aimed at propagation and trait improvement of this bioenergy crop, and its ultimate growth and processing in Southern Virginia.

The Education & Outreach (E&O) department supported three grants during FY 2012: (1) $84,974 awarded in conjunction with Virginia Tech through the National Science Foundation - “Supporting and Assessing Fraction Efficiency with Game-Based, Mobile Applications and Devices,” (2) $24,000 awarded by the J.T.-Minnie Maude Charitable Trust - “STEM Factory” (science, technology, engineering and mathematics), and (3) $13,000 awarded by the Community Foundation of the Dan River Region - “STEM University.”

Factors that are likely to affect the budget include state revenues, further economic downturn, lack of capital for companies to grow, and ability to collaborate with other agencies on grant applications.

Fund Sources

No Data Available

Revenue Summary Statement

While external revenues were down in FY2012 compared to FY2011, the Institute took the year to better position itself in the marketplace and the results of that effort have shown a marked improvement in the first quarter of FY2013. Contract revenue relationships with Japan Tobacco International (JTI) and DanChem are coming to fruition while additional grant revenue from a variety of sources (Tobacco Commission, Dan River Foundation, U.S. Department of Agriculture) is being actively pursued.

Key Risk Factors

The Institute for Advanced Learning and Research (IALR) needs to increase its revenue stream so as to enable research and development, and educational programs, to be pursued. This revenue stream needs to be over and above state funds which cannot be relied upon. Without a concerted effort to maintain and increase state funds, and increase the number of grants and contracts awarded, the mission of the IALR will be severely compromised.

Factors that will have a significant impact on the agency over the next four years include:

State Budget: State appropriations must be used to provide operational funds to enable a functional Institute for Advanced Learning and Research (IALR) and the ability to pursue research and development (R&D). It is essential that IALR maintain our state budget to cover basic costs and enable staff to bring in extra revenue in grants and contracts.

Revenues: The IALR must generate extra funds to enable pursuit of relevant R&D providing maximum commercial impact.

Hiring Researchers and staff: Difficulty in identifying and attracting competent staff skilled in science, technology, engineering and mathematics (STEM) poses a risk to IALR.

Shrinking size of local industry / manufacturers: Lack of capital for companies to grow and also for new companies to start-up in the region will impact IALR.

Performance Highlights

The Institute for Advanced Learning & Research (IALR) is an innovative organization working toward providing economic and social benefit to our community. We are working to align IALR Research programs with the strategic economic plans of our region and of the

Commonwealth. There are a total of 17 scientists, technicians, postdoctoral and graduate students working on IALR research programs. Additionally, there are 1 undergraduate, 2 high school interns and 1 educator intern working in the research area.

During FY2012 the state-of-the art LEED (Leadership in Energy & Environmental Design) Sustainable Energy Technology Center (SENTEC) was completed and the full space was leased prior to the April grand opening. The building itself demonstrates sustainable energy in action. The total financial benefit to the community exceeded $10M during the first year.

The Tobacco Commission's award of $1.8M enabled the IALR to partner with ProteiosBio to focus on commercialization of protein products and with Chemtex aimed at propagation and trait improvement of the Arundo donax bioenergy crop.

The IALR is expanding outreach to area polymer and chemical manufacturers to initiate collaborative opportunities. Partnerships with local K-12 school systems, universities and community colleges are also expanding.

During FY2013 the IALR will see the number of employees in research, development and commercialization increase as we utilize the additional appropriation targeted for polymers and chemical collaborations.

Performance Measures

Management Discussion & Analysis

General Information about the Ongoing Status of the Agency

The Institute for Advanced Learning and Research (IALR) is currently working on developing and attracting technology and talent critical to Southern Virginia's economic prosperity. As a regional resource, IALR's research centers are providing the basis for a new economy in Southern Virginia. Virginia Tech (VT) and IALR research faculty manage innovative programs that increase regional economic growth through sponsored research, product testing and commercialization. The innovative strategies that are currently being used to revitalize the economy include a focus on sustainable energy, high value horticulture, and forest products. These strategies build upon existing regional strengths. The IALR is working on ways in which talent and resources can be used, especially through collaborative efforts. These efforts are of special importance as the IALR works toward providing local manufacturers with opportunities that will enable them to compete in a global marketplace.

A major goal for the IALR is the development and commercialization of technologies concerned with the conversion of agricultural and forestry based materials into products required by bio-energy and bio-product based industries. This goal is directly aligned with the renewable energy plan of the Commonwealth of Virginia, and also in the support of existing and new businesses, represented by the polymer and chemical manufacturing industry cluster in Southern Virginia. This industry cluster is actively seeking support to develop industrial biotechnology to enable the introduction of bio-based products into their product lines. The region also recognizes the importance of polymer manufacturers, along with wood products, as a key manufacturing specialization for economic development in the region. This recognition emphasizes advanced manufacturing and represents a diverse range of technologies and skill sets.

Information Technology

Older Smartboard technology has been replaced with the latest touchscreen technology. Planning is underway to modernize the executive boardroom that is frequently used as a meeting place for external customers. The agency's remote access solution has been replaced. Increased security has been implemented with modern internet firewalls placed into service. Planning is ongoing for replacement of the accounting system. The Institute for Advanced Learning & Research (IALR) is focused on leveraging cloud technologies to increase efficiencies and reduce response time of service requests. The IALR will be implementing a software solution to aid in the protection of sensitive data stored on all computer systems.

The IALR, though a local partnership, has deployed Internet Protocol TeleVision (IPTV) service for the building. This will allow the agency to provide high definition (HD) television services while reducing cost to the organization.The IT department is also increasing its level of support to the region's technology council.

The IT department is involved in discussions with Averett University staff and faculty to determine how they can take advantage of the distance learning technology in place at the IALR. The university plan is to offer classes throughout the state using the IALR's videoconference enabled classrooms.

The Sustainable Energy Technology Center (SENTEC) building has a completely operational network, both wired and wireless.

The agency's most significant future technology needs include:

- Implementation of a mobile device management solution to allow IT staff the ability to secure, monitor, manage and support mobile devices

- Implementation of new accounting system software and document management system
- Monitoring classroom and conference room usage and determining what equipment needs to be upgraded
- Evaluation, implementation and training users on a software system that captures metrics in an efficient and productive manner

Workforce Development

A significant number of managers will reach retirement age within the near future at the Institute for Advanced Learning & Research (IALR). 67% of managers are age 50 or older; 17% of managers are within 5 years of retirement. The wide disparity with the age of the current workforce (57% age 40 or older; 22% ages 30 to 40, and 21% below 30 years of age) makes it challenging to adequately implement a succession plan. Management is identifying key and hard-to-fill positions, scanning existing workforce for potential, and establishing steps needed to provide “gap” development. A process has been implemented in areas requiring multiple levels of expertise that will offer a career path opportunity for current staff, and help with retention rates. Development, skill and competency needs are incorporated into the performance review process and continuing education is encouraged.

Recruiting/retaining challenges include (1) finding qualified individuals in the workforce, especially in the science, technology, engineering and mathematics (STEM) curriculum within the region, and (2) attracting and retaining recent college graduates in the area.

Efforts are focused on enhancing knowledge and skills. The IALR is engaged in collaborative discussions with higher education agencies and our researchers to strengthen the research efforts through studies, grant partnering and potentially establishing a master' s level program in biology with the IALR providing the advanced lab experience.

Through partnerships with the local university, community colleges, the education system, other agencies, and corporate businesses, the IALR is developing internship programs that will ultimately serve 3 functions: (1) offer the student practical, hands-on experience and open the door for potential future employment; (2) serve as a pipeline of entry level positions for IALR staffing needs; and (3) retain/attract young talent for the region.

The state does not appropriate positions at the IALR.

Physical Plant

The Institute for Advanced Learning and Research's (IALR) main campus building contains administrative offices, research areas and a conference center along with leased space to entities engaged in research related activities. IALR Main is eight years old and is beginning to need increased maintenance.

Audio visual equipment that is becoming obsolete and beginning to fail must be upgraded to provide optimum information technology to area businesses that frequently use the IALR to promote economic development, and to remain competitive with conference center sales.

An uninterruptible power supply to support disaster recovery and prevent loss of data is needed to bring the IALR into full compliance with Virginia's Continuity of Operations Plan (COOP) and disaster recovery standards.

IALR Main consumes nearly 29% more electricity per square foot than the industry average for similar buildings and 64% more per square foot than highly efficient facilities. The single largest driver of this electrical consumption by a factor of 2 is interior lighting. After the capital costs for retrofitting and replacing incandescent and fluorescent interior lighting with efficient Light Emitting Diode (LED) fixtures, electrical consumption for lighting should drop by more than 80%.

Long term growth needed for the IALR's research programs to attract additional high technology enterprises requires extra space to house funded research projects and research services. Major educational and outreach programs are dependent on continued development and research opportunities identified, discovered and processed at the IALR. Enlarging the research wing to add a Service Research Facility (SRF) will increase operational, lab and office space and enhance the existing infrastructure to accommodate expanding research activities, academic programs, polymer initiatives and analytical services.