CCALS Commonwealth Center for Advanced Logistics Systems

October 3, 2024

The Honorable Caren Merrick
Secretary of Commerce and Trade
Commonwealth of Virginia
Patrick Henry Building
1111 East Broad Street
Richmond, Virginia 23219

The Honorable Luke Torian
Chair, House Appropriations Committee
Virginia House of Delegates
201 N. 9th Street
General Assembly Building, 12th Floor
Richmond, Virginia 23219

The Honorable Mark Sickles
Vice Chair, House Appropriations Committee
Virginia House of Delegates
201 N. 9th Street
General Assembly Building, 12th Floor
Richmond, VA 23219

The Honorable Louise Lucas
Chair, Finance and Appropriations Committee
Senate of Virginia
201 N. 9th Street
General Assembly Building, 13th Floor
Richmond, Virginia 23219

Michael Maul
Director, Virginia Department of Planning and Budget
1111 East Broad Street
Room 5040
Richmond, Virginia 23219-1922

Joseph Benevento
President and CEO
Virginia Innovation Partnership Authority (VIPA)/Virginia Innovation Partnership Corporation (VIPC)
313 East Broad Street
Richmond, Virginia

CCALS Commonwealth Center for Advanced Logistics Systems

Commonwealth Center for Advanced Logistics Systems ("CCALS")

Ladies and Gentlemen: Respectfully submitted is the full and complete CCALS report as required by Section M.2 of Item 127 of the 2023 Session enrolled budget. This report covers the period from July 1, 2023 through June 30, 2024 as called for in budget language (as follows):

M.1. Out of the appropriation in this Item, $350,000 the first year and $350,000 the second year from the general fund is designated for the Commonwealth Center for Advanced Logistics (CCALS) to provide seed money for collaborative public sector projects with partners, such as the Port of Virginia, Department of Corrections, and the Virginia Department of Transportation.

2. CCALS shall submit a report by October 1st of each year to the Secretary of Commerce and Trade, the Chairs of the House Appropriations and Senate Finance and Appropriations Committees, the Director of the Department of Planning and Budget, and VIPA to include (i) all planned and actual revenue and expenditures along with funding sources, including state, federal, and other revenue sources for CCALS, (ii) the research activities of CCALS, and (iii) relevant economic outcomes as a result of the CCALS' work in each fiscal year.

Sincerely,

Dr. Dawit Haile, Interim President and Executive Director, CCALS

cc w/enclosure: Karen Jackson, Senior Fellow, CCALS

Commonwealth Center for Advanced Logistics Systems (CCALS)

Report of Unaudited Revenues, Funding Sources, Research Activities and Relevant Economic Outcomes For Fiscal Year 2024

Content

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CCALS Commonwealth Center for Advanced Logistics Systems

Background

CCALS Mission

CCALS is a multi-university, multi-disciplinary ecosystem that provides an opportunity for faculty and students to collaborate with private, public, and nonprofit sector professionals to proactively engage logistics and supply chain challenges through projects, research experiences, and career-ready workforce opportunities.

CCALS Board of Directors

Dr. Jeffrey J. Fox, Chair
Assistant Dean for Research, University of Virginia Engineering

Dr. Kuntal Bhattacharyya
Director, School of Supply Chain, Logistics and Maritime Operations, Old Dominion University

Dr. Azim Eskandarian
Dean, College of Engineering, Virginia Commonwealth University

Dr. Dawit Haile
Dean, College of Engineering and Technology, Virginia State University

Eric Jehu
Vice President, Logistics, Virginia Economic Development Partnership

Keith Martin
Executive Vice President, Public Policy and Government Relations, General Counsel, Virginia Chamber

Barbara Nelson
Vice President, Transportation and Government Affairs, Virginia Port Authority

Dr. Thomas PlaHovinsak
Associate Professor of Economics, Longwood University

CCALS Staff

Senior Fellow, the **Honorable Karen Jackson**, former Commonwealth Secretary of Technology currently leads CCALS. In this capacity, she works to develop opportunities for CCALS universities to collaborate on logistics and supply-chain-related research, problem-solving, and career-connected experiences.

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CCALS Commonwealth Center for Advanced Logistics Systems

CCALS Primary Partners and Business Advisory Committee

The Port of Virginia
portofvirginia.com

Virginia Economic Development Partnership | vedp.org

Virginia Chamber
vachamber.com

Longwood University
longwood.edu

Old Dominion University
odu.edu

University of Virginia
virginia.edu

Virginia Commonwealth University
vcu.edu

Virginia State University
vsu.edu

Crater Planning District Commission | craterpdc.org

ATiP Foundation
atipfoundation.com

Camrett Logistics
camrett.com

Cowden Technologies
cowden.tech

Dragonfli
dragonfligroup.com

Hillcrest Transportation
hillcresttransportation.com

Holmes Consulting LLC

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Required Report Elements

Budget Language:

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CCALS 2024 Highlights

Return on Investment

CCALS-supported programs and projects have received more than $475k in Federal funding ($202,500 FAA-FAST Tier One SAF and $275,000 from the Federally funded CHEST, the Center for Hardware and Embedded Systems Security and Trust), creating a positive return on investment for the Commonwealth.

Talent Development

CCALS employed six Fellows during FY 24. The multi-university team worked on topics of importance to the Commonwealth, including Sustainable Aviation Fuels and Biomass, and Autonomous Air Mobility (AAM). Two Fellows have now graduated and are pursuing careers at Amazon and Dominion Energy, while a third is now pursuing a graduate degree at UVA.

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Extended Outreach

CCALS sponsored and participated in numerous meetings and events across the Commonwealth, including the Southwest Virginia Economic Development Forum, Virginia Chamber Logistics and Economic Development Committee meetings, and the Center/Council for Rural Virginia Board Meeting.

FAA SAF Briefing and Distinguished Lecture

On March 25, 2024, CCALS hosted Federal Aviation Administration (FAA) Energy Division Manager Prem Lobo, the ATIP Foundation, the Commercial Aviation Alternative Fuels Initiative (CAAFI), the Virginia Department of Aviation (DOAV), and the Virginia Tobacco Region Revitalization Commission at the University of Virginia for a briefing on the status of the Virginia Sustainable Aviation Fuel Modeling Project. CCALS also facilitated Lobo participating as a guest lecturer for a CCALS and UVA Engineering Distinguished Lecture.

SAF Invited Talk

On June 26, 2024, Lisa Colosi Peterson, Ph.D. and James H. Lambert, Ph.D. along with CCALS Senior Fellow Karen Jackson, presented an invited talk, “Sustainable Aviation Fuels Supply Chains in Virginia,” to the Commercial Aviation Alternative Fuels Initiative (CAAFI).

Expanded Industry Engagement

CCALS is working to expand its new Business Advisory Council to include drone, cyber, and family-owned transportation companies.

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II Financials

	Jul '23 - Jun 24	Budget	Jul '23 - Jun 24	YTD Budget	Annual Budget
Ordinary Income/Expense					
Income					
Revenues					
Federal	0.00	0.00	0.00	0.00	0.00
Port of Virginia	0.00	50,000.00	0.00	50,000.00	50,000.00
State	0.00	5,000.00	0.00	5,000.00	5,000.00
VIPA	350,000.01	350,000.00	350,000.01	350,000.00	350,000.00
Total Revenues	350,000.01	405,000.00	350,000.01	405,000.00	405,000.00
Total Income	350,000.01	405,000.00	350,000.01	405,000.00	405,000.00
Expense					
Accounting	9,600.00	9,600.00	9,600.00	9,600.00	9,600.00
Auditing	2,550.00	15,000.00	2,550.00	15,000.00	15,000.00
Dues and Subscriptions	2,443.69	3,000.00	2,443.69	3,000.00	3,000.00
Government Relations	0.00	0.00	0.00	0.00	0.00
Insurance Expense	613.00	6,000.00	613.00	6,000.00	6,000.00
Internships & Fellowships	82,251.05	0.00	82,251.05	0.00	0.00
Legal Fees	9,445.50	60,000.00	9,445.50	60,000.00	60,000.00
Management Fees	69,000.00	72,000.00	69,000.00	72,000.00	72,000.00
Marketing & IT	15,706.04	18,000.00	15,706.04	18,000.00	18,000.00
Meetings & Conferences	2,500.00		2,500.00		
Membership Expense	25,000.00	25,000.00	25,000.00	25,000.00	25,000.00
Membership Recruiting	0.00	0.00	0.00	0.00	0.00
Office Supplies	86.27	500.00	86.27	500.00	500.00
Payroll Administrative Fees	508.75	1,000.00	508.75	1,000.00	1,000.00
Research Project (PORT)	50,000.00	100,000.00	50,000.00	100,000.00	100,000.00
Special Projects	0.00	80,000.00	0.00	80,000.00	80,000.00
Telephone Expense	0.00	1,200.00	0.00	1,200.00	1,200.00
Travel Expense	0.00	1,000.00	0.00	1,000.00	1,000.00
Total Expense	269,704.30	392,300.00	269,704.30	392,300.00	392,300.00
Net Ordinary Income	80,295.71	12,700.00	80,295.71	12,700.00	12,700.00
Net Income	**80,295.71**	**12,700.00**	**80,295.71**	**12,700.00**	**12,700.00**

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III CCALS Research Activities

Fostering logistics education & career paths – CCALS Fellows and Alums, VSU-UVA Pathway

Five students from Virginia universities were selected to participate in the FY2024 CCALS Research Fellowship. These research fellows were tasked with following goals and objectives:

- Initiate assessment of Virginia's logistics and supply chain ecosystem(s) – Strengths, Weaknesses, Opportunities, and Threats.
- Begin information gathering and initial engagements with key stakeholders.
- Identify emerging technologies (AI, blockchain, autonomy, etc.) that have shown the ability to impact logistics, transportation, and supply chains.
- Perform data collection and benchmarking of state-level logistics and supply chain programs, policies, and ecosystems to identify best practices and recommendations.

Meet our five research fellows and their summer collaborator, and learn more about the future change-makers of Virginia's supply chain:

Jalen Jackson

- *University*: Virginia State University (now UVA Graduate Student)
- *Role in Fellowship*: My role in this fellowship was to research, analyze, and create questions to ask stakeholders about various issues in Virginia logistics.
- *Fun Fact*: I enjoy drawing.
- *Biggest Challenge*: Creating questions to supplement our research in order to obtain the finest information for our assignment was a challenge for me.
- *Most Fulfilling Aspect*: The most satisfying component of this fellowship opportunity was meeting these fantastic groups of individuals and our group work. We worked hard as a team to produce this fantastic report and presentation.
- *Additional comments*: The fellowship gave me an excellent chance to expand my knowledge, enhance my public speaking skills, and strengthen my teamwork abilities.

Elaina Clifford

- *University*: Longwood University (Now employed by Amazon)
- *Role in Fellowship*: I embraced diverse roles, leveraging my expertise in economics, marketing, and supply chain management to contribute effectively.
- *Fun Fact*: I love to read, camp, and hike during my free time.

- *Biggest Challenge*: I believe that the most challenging aspect of the fellowship revolved around embracing the uncomfortable and finding comfort in it; the process of learning is not always a smooth journey. Throughout this fellowship, I had the opportunity to acquire a plethora of new knowledge and skills that will undoubtedly have a lasting impact on my professional trajectory.
- *Most Fulfilling Aspect*: The most fulfilling aspect of this fellowship was getting the opportunity to see my team members grow and helping them in their professional development. We all brought different things to this project and came into this fellowship with such different backgrounds, which I believe provided many advantages.
- *Additional comments*: The team and I feel that our exploration of logistics in Virginia merely scratches the surface, given the intricacies of the supply chain. There exists an abundance of untapped potential. I want to express my sincere gratitude for the opportunity – it has been an absolute pleasure.

LaTonya Warren

- *University*: Old Dominion University
- *Role in Fellowship*: My role in this fellowship, I feel, was to provide insight from a chemistry perspective. As everyone on the team is majoring in some form of engineering, I was the only student majoring in chemistry. This was great, for it diversified our team and I feel that moving forward our team will be the standard.
- *Fun Fact*: I am the mother of an amazing 11-year-old son named Kayden.
- *Biggest Challenge*: Nothing comes to mind for I feel our team's dynamic was great. And we quickly fell into a rhythmic ebb and flow.
- *Most Fulfilling Aspect*: I learned something new every single day! And had the amazing opportunity to speak with a lot of great leaders on the business side and the policy side here in Virginia.
- *Additional comments*: This program should continue on through the fall semester. There is so much work to be done and it is so important to see projects like these to the finish.

George Boulos

- *University*: The University of Virginia
- *Role in Fellowship*: Interviewing, opportunities, and policy.
- *Fun Fact*: I like chocolate milk and judo.
- *Biggest* Challenge: Staying at home and some irregularity in meetings.

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- *Most Fulfilling Aspect*: Working on a project to improve the state I grew up in. Also, I'm a big fan of making things efficient.

Sofoniase Zeraye

- *University*: Virginia Commonwealth University studying mechanical engineering and physics. (Now employed by Dominion Energy)
- *Role in Fellowship*: I focused primarily on data analysis for the project, scouring the web for publicly available data sets that related to the points of interest for our research and querying them to highlight specific metrics and identify trends.
- *Fun Fact*: I got bored during quarantine so I taught myself how to tattoo and tattooed myself. I'm not the best but considering I'm self-taught and have only practiced on myself I'd say I'm decent at it.
- *Biggest Challenge*: Collaborating with a team to achieve broader goals. Communication is very important especially when the research is so interconnected and we're working remotely, often on our own schedules.
- *Most Fulfilling Aspect*: Seeing everything we spent two months working towards coming together. I'm proud of what we've been able to achieve.

Autumn Heeren

University: Longwood University
Role in Fellowship: Participated in Summer 2024 session focusing on Sustainable Aviation Fuels and Biomass.

Notable CCALS Alums

Dr. Elizabeth B. Connelly

2024 Recipient – UVA School of Engineering and Applied Science (SEAS) Outstanding Young Engineering Graduate Award

At the International Energy Agency (IEA) since 2020, Dr. Connelly modeled vehicle and fuel technology adoption across international policy scenarios, with an emphasis on zero-emission vehicles. This work appears in the *IEA Net Zero by 2050* roadmap and other publications. Dr. Connelly is featured with top executives of the IEA in this 2023 webinar announcing the release of the *Global EV Outlook*: https://youtu.be/PkZ8evIrKvk and in this 2023 Shell Global Corporation podcast on EV charging: https://omny.fm/shows/the-energy-podcast/are-roads-ready-for-electric-vehicles

Prior to joining the IEA, Dr. Connelly made distinguished contributions to both the US Department of Energy (DOE) and the National Renewable Energy Laboratory (NREL). She managed several research and development projects for the DOE Hydrogen & Fuel Cell Technologies Office, focused on technologies to enable low-cost and sustainable hydrogen production and distribution. As a Principal Investigator at NREL in 2016-2018, she led systems analysis and life cycle assessment of technologies for hydrogen production from diverse domestic feedstocks. She is featured in this 2020 DOE hydrogen energy technologies assessment webinar:
https://www.energy.gov/eere/fuelcells/articles/h2iq-hour-resource-assessment-hydrogen-production

Dr. Connelly is an author/coauthor of 41 publications with 800 citations (h-index 16) in Google Scholar, including of a journal article with nearly 100 individual citations “Resilience Science, Policy and Investment for Civil Infrastructure” (Elsevier journal RESS 2018) with Lt. Gen. (Ret.) Thomas P. Bostick, the 53rd Chief of Engineers of the United States Army, and former Commanding General of the US Army Corps of Engineers.

Dr. Connelly received several awards for scholarship in her Ph.D. and M.S. degree programs, including a Louis T. Rader Graduate Service award at her 2016 graduation, and two (Best Paper) Student Merit Awards from the worldwide Society for Risk Analysis. A top recognition in her final year as a Ph.D. student was to share with several UVa faculty the 2015 R.A. Glenn Best Paper Award on Energy and Fuels of the American Chemical Society. She won a Ph.D. fellowship from the Airport Cooperative Research Program (ACRP) of the National Academies in 2014-15. She has collaborated with UVA, ODU, VCU, Longwood and VSU CCALS faculty.

Her scholarly papers citing her work with CCALS:
https://scholar.google.com/citations?user=PorQ7TUAAAAJ&hl=en

IV Collaborative Research Projects

Overview of CCALS Project Impact and Collaborations

The Commonwealth Center for Advanced Logistics Systems (CCALS) engages in a diverse array of projects that reflect its commitment to fostering collaboration and advancing the field of logistics. CCALS’s initiatives span multiple categories, encompassing partnerships with state agencies, national research organizations, private sector entities, and international partners.

This multi-faceted approach enables CCALS to address complex logistics challenges and contribute significantly to the economic and strategic goals of Virginia and beyond.

1. **Virginia Government Collaboration & Support**
   CCALS has developed strong collaborative relationships with key state agencies such as the Port of Virginia, the Department of Corrections, and the Virginia Department of Transportation. These partnerships are instrumental in enhancing logistical efficiency, optimizing supply chains, and addressing critical infrastructure needs within the Commonwealth. By working closely with these entities, CCALS not only supports the operational goals of Virginia's public sector but also contributes to the overall economic resilience and security of the state.

2. **National and International Collaborations**
   Beyond state-level engagements, CCALS is involved in national collaborations such as the partnership with the Center for Hardware and Embedded Systems Security and Trust (CHEST). These projects are vital for advancing research and innovation in logistics security. Additionally, CCALS extends its impact internationally, engaging in collaborative projects that tackle global logistics challenges, furthering Virginia's role as a leader in logistics research and development.

3. **Private Sector Partnerships and Scholarly Contributions**
   CCALS's work with private sector partners provides practical applications of research outcomes, supporting industry needs and driving innovation. These collaborations are complemented by the Center's active contribution to academic and professional communities through published research and presentations. By disseminating knowledge and engaging with thought leaders in the field, CCALS helps to shape the future of logistics and supply chain management.

Project Details and Alignment

The attached spreadsheet outlines specific projects and their alignment with these categories, highlighting CCALS's comprehensive approach to advancing logistics systems and supporting economic development across multiple domains.

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V Relevant Economic Outcomes

A Catalyst for Economic Growth and Resilience in Virginia

The Commonwealth Center for Advanced Logistics Systems (CCALS) is pivotal to Virginia's economic development through leveraging its unique consortium of universities and industry partners to address complex logistics challenges. With a demonstrated return on investment of 35.7% for the Commonwealth of Virginia, CCALS has maximized the impact of state funding by securing significant external resources to support its initiatives. Through its research, innovation, and collaboration, CCALS aligns closely with the strategic goals outlined in the "*Compete to Win*" economic plan, the *VEDP Innovative Framework*, and the Virginia Chamber's *Blueprint Virginia 2030*. This alignment is crucial for positioning Virginia as a leader in advanced logistics, workforce development, and supply chain resilience.

Enhancing Logistics and Supply Chain Resilience

CCALS contributes significantly to strengthening Virginia's logistics sector by addressing critical supply chain vulnerabilities and optimizing transportation networks. Projects such as the collaborative research with NSF CHEST on securing IoT device supply chains and the analysis of USAID/USACE infrastructure projects demonstrate CCALS's role in ensuring the security and efficiency of supply chains, which is a key focus in the VEDP's goal to build a world-class transportation and logistics hub. These efforts also align with the *Blueprint*'s emphasis on enhancing Virginia's transportation infrastructure through multi-modal options and innovative funding models.

Fostering Innovation

CCALS supports the growth of Virginia's advanced manufacturing and innovation sectors through targeted research and collaboration with industry leaders. The partnerships with DARPA and the Department of Defense on logistics security and supply chain resilience reflect the "two-track economic development strategy" proposed in the *Blueprint Virginia 2030*, which aims to attract high-growth sectors while supporting startups and commercialization efforts. These initiatives ensure that Virginia remains competitive in high-growth industries, contributing to the Commonwealth's goal of economic diversification.

Workforce Development and Talent Attraction

CCALS's focus on workforce development is aligned with the VEDP's "*Unleash a Talented Workforce*" strategy and the *Blueprint*'s priority to strengthen Virginia's talent pipeline. By providing training and research opportunities to students at UVA, VCU, Longwood, ODU, and

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VSU, CCALS addresses the need for a skilled workforce that can meet the evolving demands of Virginia's logistics and advanced manufacturing sectors. Notably, CCALS has hosted six "in-house" fellows and is actively supporting seven students from Virginia State University as they pursue their master's degrees at the University of Virginia. The workforce development partnership with the Port of Virginia is another example of CCALS's commitment to aligning educational outcomes with industry needs, supporting the Youngkin Administration and Chamber *Blueprint*'s calls for expanding internships, apprenticeships, and other work-based learning programs.

Promoting Regional Economic Growth and Resilience

CCALS's support for initiatives in Southwestern Virginia (SAF/ATIP), including programs aimed at securing municipal water systems and the electric grid, contribute to the resilience of local communities, and support the *Blueprint*'s focus on rural economic development. These projects not only provide immediate benefits to local infrastructure but also help attract new investments to underserved regions, thereby promoting economic stability and growth throughout the Commonwealth.

Leveraging Cross-Sector Collaboration for Greater Impact

CCALS exemplifies the "*Commonwealth Collaboration*" strategy by fostering partnerships across government, industry, and academia. The collaborative efforts with VDOT, DOAV, and the Port of Virginia to improve transportation resilience and logistics optimization demonstrate how CCALS is helping to build an innovation ecosystem that enhances Virginia's economic competitiveness. Such cross-sector collaboration is essential for achieving the goals set out in the *Blueprint*, including leveraging public-private partnerships to address critical infrastructure needs like broadband expansion.

Through its focus on logistics resilience, innovation, workforce development, and regional growth, CCALS plays a critical role in advancing Virginia's economic development goals. By aligning its initiatives with the strategic priorities of the "*Compete to Win*" economic plan, the VEDP *Innovative Framework*, and the Virginia Chamber's *Blueprint Virginia 2030*, CCALS ensures that Virginia is well-positioned to compete on both national and global stages. These efforts provide tangible economic benefits to the Commonwealth, reinforcing its role as an indispensable asset in Virginia's economic development ecosystem.

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	A	B	C
1			
2	**Project**	**FY24**	**FY25**
3			
4			
5	**Collaborative research with NSF – Center for Hardware & Embedded Systems Security & Trust (CHEST)**: Graduate students have been instrumental in supporting the eight faculty members awarded new 12-month grants in June 2024. These projects involve the analysis of supply chains of IoT devices in Amazon supply chains. Their work includes conducting research, developing models, and presenting findings at national conferences, significantly contributing to the projects' success and the NSF CHEST's objectives.		x
6	**Analysis of Supply Chains of USAID/USACE Infrastructure Projects in Iraq**: Students have played a critical role in the $200K funded project, studying the impacts of water scarcity in collaboration with **USACE, US Army Corps of Engineers,** and the **Iraq Ministry of Water Resources.** Their contributions include data collection, analysis, and participation in hosting the USACE Transatlantic Division Senior Executive Service, furthering the project's goals of understanding and mitigating water scarcity issues.		x
7	CC**ALS co-sponsored "Advanced Science Workshop" on Supply Chains of New Biothreats and Countermeasures**: In Cartagena, Colombia, graduate students participated in hosting a workshop for top scientists of the **DoD** and **NATO,** involving about 50 participants. Their involvement included logistical support, data analysis, and contributing to discussions on supply chains and biothreat countermeasures, enhancing the workshop's success.		x

	A	B	C
8	**CCALS co-sponsored "Advanced Science Workshop" on Resilience of Disrupted Infrastructure Systems**: For a September **NATO** workshop in Varna, Bulgaria, students prepared agendas, coordinated invitees and participants, and developed working materials. Their efforts were crucial in ensuring a well-organized and impactful workshop, focusing on the resilience of disrupted infrastructure systems		x
9	**Analysis of Wildfire Detection and Countermeasures**: Collaborating with scientists from the USA and Italy, students have been actively involved in wildfire detection and countermeasure projects. They contributed to a simulation exercise at an international meeting in Summer 2024, and co-authored a publication submitted to ASCE, showcasing their research skills and international collaboration.		x
10	**National and international professional publications acknowledging support of CCALS and Commonwealth of Virginia agencies**: Research, conducted alongside professionals from **VDEM, DoD, USAID, VDOT, DOAV**, and **CCALS**, covers a range of topics, emphasizing academic contributions and recognition within professional societies.	x	x
11	**Guest presentations**: Students have had the opportunity to host guest speakers from organizations **such as IEEE, Raytheon, Systems Planning and Analysis Inc**., and **Schneider Electric**. These sessions focused on the resilience of disrupted technology-based systems, providing students with insights and networking opportunities with industry leaders.		x
12	**Supply chains of critical materials**: In November 2023, a CCALS faculty member presented at a top-level **DARPA** and **USACE** workshop on supply chains of rare earth metals and other critical materials in Rhode Island. Graduate students supported this presentation by conducting background research and analysis, contributing to the workshop's success.		x
13			
14			
15			

	A	B	C
16	**CCALS and Port of Virginia research partnership:** Students are analyzing the electrification of port vehicles, developing simulation models to guide investment in new equipment over a five-year horizon. Their work focuses on addressing supply chain disruptions, contributing to the partnership's long-term goals.	x	x
17	**Virginia Transportation Research Council (VTRC)**: In collaboration with VDOT, students are involved in data analytics and resilience of transportation plans. They host the VDOT Pathways for Planning database on Amazon Web Services, demonstrating their technical and analytical capabilities.	x	x
18	**Transition to sustainable aviation fuel (SAF) in Virginia**: Supporting feasibility analysis for sustainable aviation fuel, students have contributed to proposals submitted to **FAA** and **DOAV**. Their involvement is crucial in the project's progress, with funding decisions expected in September 2024.	x	x
19	**Sustainabile aviation fuel (SAF)**: The team of **UVA-DOAV-CCALS** and **CAAFE** was awarded a **FAA-FAST Grant** (Tier One) to advance the evaluation of SAF production in the Commonwealth.		
20	**CCALS Fellows research on logistics in Virginia**: Initiated in 2023, the team of CCALS fellows has worked diligently to benchmark logistics in Virginia and identify areas of opportunity for the Commonwealth, including Autonomous Air Mobility (AAM), Sustainable Aviation Fuels, (SAF), and Cyber Security-Supply Chain Resilience.	x	x
21	**Collaborative Research with NSF – CHEST**: Seven UVA faculty members received NSF CHEST 2023 funding, and students are actively participating in projects analyzing the disruption of semiconductor supply chains. Their research addresses environmental changes and access to critical materials, contributing to the broader objectives of the NSF CHEST.	x	x

	A	B	C
22	**US Army Corps of Engineers Engineering Research and Development Center Support**: Graduate students are involved in modeling and data analysis to improve the resilience of complex systems under **USACE's** purview. Their work supports efforts in Iraq by providing models of infrastructure disruptions due to water scarcity and climate change.	x	x
23	**Virginia State University and UVA MS/PhD cohort of graduate students**: Students from VSU recruited to UVA graduate engineering programs have achieved significant milestones, including one Ph.D. graduate joining the DoD in July 2024. Several Ph.D. students have earned "en route" Master's degrees and participated in international conferences, showcasing their academic and professional development.	x	x
24	**Agricultural Technology Innovation Partnership Foundation (ATIP)**: CCALS is partnered with the **ATIP Foundation** and the **Tobacco Region Revitalization Commission** to advance the development of the biomass ecosystem in Southwest Virginia. ATIP is leveraging **USDA** funding for the project.	x	x
25	**Virginia Department of Emergency Management Statewide Hazard Mitigation Plan**: Graduate students have analyzed the perspectives of Virginia agencies on disaster resilience and emergency management. Their research contributes to enhancing the state's hazard mitigation strategies and policies. The above initiatives, many of which continue into FY 2025 (July 2024-June 2025), highlight the diverse and impactful contributions of CCALS graduate engineering students at UVA Engineering, demonstrating their key roles in advancing CCALS service and research, fostering collaboration, and addressing real-world challenges.	x	x
26	**CCALS Fellows Research of Logistics in Virginia**: Initiated in 2023, the team of CCALS Fellows has worked diligently to benchmark logistics in Virginia and identify areas of opportunity for the Commnwealth including Autonomous Air Mobility (AAM) and Sustainable Aviation Fuels (SAF).	x	x

	D	E	F	G	H
1	**CCALS Projects and Outcomes**				
2	**Collaboration with State Agency**	**Collaboration with Federal Government/ National Organizations**	**International Engagement**	**CHEST**	**Workforce**
3					
4	**New Initiatives (FY 2024)**				
5				x	
6		x	x		
7		x	x		

	D	E	F	G	H
8			x		
9		x	x		
10	x				
11					
12		x			
13					
14	**Continuing initiatives (from FY 2024)**				
15					

	D	E	F	G	H
16	Port of VA				
17	VTRC-VDOT				
18	DOAV				
19	x	x			
20	VEDP, PoVA, State Chamber				x
21		x		x	

	D	E	F	G	H
22		x			
23					x
24	VTiC				
25	VDEM				x
26					x

	I
1	
2	**Economic Development**
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10	In FY 2024, graduate students co-authored more than 25 publications in archival journals and peer-reviewed conferences.
11	
12	
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	I
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18	Sustainable Aviation Fuel (SAF) is an emerging opportunity for the Commonwealh. CCALS-UVA-DOAV have been engaged in the field for nearly a decade.
19	$202,500 award from FAA-FAST (Tier One) - August 2024
20	Provides detailed information regarding future economic development opportunities to support decision making and strategy development by leaders at VEDP, the Virginia Chamber, the POV, VIPA, etc. Follow-on work has been completed related to SAF and AAM.
21	Semiconductor supply chain disruption analysis. CCALS annual $25k investment in CHEST membership resulted in $275k in funding for CCALS related projects.

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23	Contributes to the development of a trained, industry ready workforce by providing students from VSU a pathway to UVA graduate engineering programs.
24	Supporting biomass economic ecosystem development in SWVA
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26	Students worked to advance knowledge in sectors and disciplines of importance to the Commonwealth. Their work is intended to augment bodies of work underway at UVA and DOAV, and in the private sector.