



# SMART Act Presentation

## SB18-086 Cyber Coding Cryptology For State Records

*Joint Business Committee Presentation*  
January 9, 2025



COLORADO STATE UNIVERSITY  
SYSTEM

Colorado State University • Colorado State University-Pueblo • CSU-Global Campus



NATIONAL  
CYBERSECURITY  
CENTER



WESTERN  
COLORADO UNIVERSITY



PIKES PEAK  
STATE COLLEGE

# SB 18-086 Colorado-wide Cybersecurity Collaborative efforts 2024-2025

- **Collaborative Cyber Patriot Camps – Building student pathways – 100 students - Summer 2024**
  - Intro CyberPatriot – 8-12 July 2024
    - NCC, UCCS, PPSC, MSU, and CSU
  - Advanced CyberPatriot – 15-19 July 2024
    - NCC, UCCS, PPSC, MSU and Mesa
  - *Simultaneous camps allowed for lower cost for curriculum and opportunities to cross connect camps with activities*
- **Colorado-wide Cybersecurity Industry Certification Courses – 150 students - Fall 2024 & Spring 2025**
  - Security + - 5-17 August 2024 - UCCS
  - Security + - 30 Sept – 26 Oct 2024 – UCCS
  - Security + - 4-23 Nov 2024 – PPSC
  - Security + - 6-18 Jan 2025 – MSU, Western, CSU
  - Security + - 3 Feb – 1 Mar 2025 – MSU, Mesa, CSU
  - Certified Ethical Hacker – 5-18 Jan 2025 – UCCS
  - *Finding affordable industry certification instructors is challenging – one instructor taught all the Security + classes across the state. Awarded a \$40,000 Boettcher Foundation Grant*
- **Digital Forensics to counter human trafficking (CHT) – all institutions – partnering with Colorado law enforcement – Spring 2025**
  - CSU, MSU, UCCS, Mesa, Western, PPSC and Cyber Fox digital forensics training and existing institution resources

# UCCS's Impact Through the CO Cybersecurity Initiative: AY2023-2024

- **Consistently exceeds** legislative requirements using 34% of funding this year for student scholarships.
- **312 student scholarships** (58% increase over last year) in cybersecurity programs
- **Cybersecurity enrollment up 38%** over the past 6 years and is the fastest growing area at UCCS
- **313 UCCS undergrad and graduate students and NCC program participants** and various members of industry earned cybersecurity degrees, minors or industry certificates
- UCCS is the first Colorado University to obtain the National Security Agency Center of Academic Excellence Research Designation
- UCCS cybersecurity faculty, staff and students completed **276** cybersecurity **presentations, research papers and seminars**
- UCCS cyber faculty leveraged state funds to obtain **over additional cyber funding**
  - Actively pursuing grant opportunities as a result of state funding
  - **UCCS is a nationally acknowledged leader in the CAE community**
  - UCCS conducted **seven Summer Cybersecurity Camps (2 all in Spanish)** reaching over 16 teachers and 300 middle and high school students
- **UCCS continues to fund activities of the Mountain West Cybersecurity Consortium (MWCC)**, connecting cybersecurity programs across the state and region
  - Expanding K-12 collaboration and engagement – CS Rocks
- UCCS is **expanding** the **Cybersecurity POWER Strategy** to focus on **workforce ready graduates**, increasing industry partnerships to boost student internships and hands on workforce experience being demanded by industry.

***The state's investment is critical for sustaining tremendous momentum***



# NCC 2024 KEY ACCOMPLISHMENTS



## PROGRAMS:

### ■ Cyber Education

- **Doubled the number of middle and high school camps from 4 to 8** through successful collaboration with UCCS serving **187** students in total; includes 2 camps in Spanish and the Cyber Patriot “across Colorado camp” had 63 students concurrently working across the state.
- Reshaped **K-12** programming to complement partners by moving into NCC classroom at the Family Success Center.
- Exploring initiatives in experiential adult learning such as new Capture the Flag (CTF) offerings
- Haunted Brewery had **800 participants** across the world. Planning “Scavenger Hack” CTF for spring 2025.

### ■ PISCES

- Completed in May 2024 and had significant impact for Colorado.
- The student analysts’ critical support improved the networks and digital systems of organizations representing **447,000 Coloradans**.
- 203 students trained as analysts, identified 1683 potential security threats and reported 556 viable threats.
- **14 SLTT** organizations or data sharing partners participated.



# CROWN JEWELS ASSESSMENT

The National Cybersecurity Center (NCC), created an **assessment initiative** tailored for state, local, tribal & territorial (SLTT) organizations. This program aims to accurately **assess the operational fallout of cyberattacks** and facilitate informed security investment decisions for critical functions.



MORE THAN  
**1041**  
CROWN JEWELS IDENTIFIED



# OF DEPARTMENTS  
**312**  
INTERVIEWED



# OF ORGANIZATIONS  
**21**  
ASSESSED

## Deliverables:

- **Executive Summary:** Outlines project goals, methods, and how we support the findings in the project.
- **Crown Jewels List:** Compilation of top priority assets necessitating protection based on criticality and impact analyses.
- **Tier-Based Recommendations:** Tactical guidance on asset protection strategies, encompassing both technical and operational aspects.
- **3 Tabletop Exercises:** Practical simulations based on impact analysis scenarios to enhance preparedness and response capabilities.





# Critical Infrastructure National Economic Security (CINES) Program

- The NCC is spearheading a pioneering initiative to strengthen U.S. national preparedness and resilience. **Through innovative AI-driven technology, the NCC has mapped all 16 U.S. Critical Infrastructure (CI) entities, capturing vital quantitative data to support strategic risk management.**
- This dataset increases situational awareness, enabling a precise understanding of business risks, optimized resource allocation, enhanced vulnerability assessments, and improved interagency coordination. This work directly supports the goals of National Security Memorandum-22 (NSM-22) on Critical Infrastructure Security and Resilience by providing comprehensive, scalable mapping of critical infrastructure organizations.
- NCC has been awarded pro bono work from Propeller consulting to develop the business plan, use cases and product development outcomes focused on our critical infrastructure solution(s).

**Deliverables: In 2024 NCC identified the problem statement for water critical infrastructure and created a product pilot.**

The problem shows that sector risk management agencies have never fully mapped critical infrastructure using the essential data needed for modern risk assessment.

**Our initial product solution pilot mapped 50 Colorado-based water infrastructure entities, capturing key economic metrics, such as annual revenue, total assets, employee count, and liability coverage.** This data empowers decision-makers to integrate cybersecurity into business strategies at the local, regional, and national levels, thereby strengthening economic security. Recently, the water CI sector has been in the news due to it being vulnerable and underfunded, consisting of small, rural businesses that lack sufficient cybersecurity resources. Adversarial attacks exploit these gaps, leading to significant financial and operational damages.





# Colorado State University System



## SB 18-086 Report, CSUS Sept. 2024

	FY 19	FY 20	FY 21	FY22	FY 23	FY24
Total SB 18-086 Appropriation	\$1,200,000	\$1,200,000	\$729,412	\$1,200,000	\$1,200,000	\$1,200,000
Actual Amount Spent on Scholarships	\$122,435	\$306,050	\$286,005	\$1,166,083	\$669,269	\$703,252
Total Number of Scholarships Awarded	45	141	118	237	106	69
Allotted Amount Earmarked for Scholarships	\$180,000	\$180,000	\$108,000	\$180,000	\$180,000	\$180,000
<b>At or above allotted scholarship earmark</b>	No	Yes	Yes	Yes	Yes	Yes
<b>Outcomes</b>						
Number of faculty/adjuncts hired...	2	32	9	22	7	8
Number of student internships	71	129	118	198	93	73
Number of degrees/certificates/course completions	28	303	371	1,061	947	925
No. presentations/seminars on cybersecurity	83	143	15	123	90	107
Amount of all other matching money raised	\$50,000	\$7,700,000	\$3,249,816	\$5,231,369	\$2,828,194	\$2,850,000

More than one hundred and fifty (150) faculty/interns hired under the grant.  
 More than 600 student participants have graduated, virtually all have jobs in IT w/ IT Security prominent. Many scholarship winners have used the scholarships to move into new or more prominent cybersecurity careers.

## Protecting CSU – Hands-On Cybersecurity Experience

- Interns run the production vulnerability management service
- Central to a major new strategic partnership with Microsoft
- Named Student Security Operations Center, professional certifications

## Opportunities for All Coloradans – Rapidly Growing Career Field

- CSU Fort Collins/Pueblo NSA Center for Academic Excellence in Cyber Defense
- Cybersecurity high school camps internships offered at Fort Collins/Pueblo
- CSU Pueblo #1 in the nation in 2024 National Cyber League competition
- 142 scholarships/internships (Over 50% offered to underrepresented groups)

## Spurring Cutting-Edge Research in Cybersecurity

- Cybersecurity research initiatives across CSU FC and CSU Pueblo: securing the critical infrastructure (~\$3M)
  - Energy security (DoE, NIST, Statnett, Norway), transportation security (NSF, ARL, DARPA, NMFTA), IT security (Industry, NIST, NSF), cognitive and social aspects of security (NSA), AI Data Analytics for Cybersecurity Training and Research (NSF)
- Cybersecurity papers/presentations/seminars: 107 (3 best paper awards in cybersecurity conferences)
- MOSAICS (More Situational Awareness for Industrial Control Systems) <https://www.jhuapl.edu/work/projects/mosaics> contributor
- Digital safety for victims of human trafficking with UCCS and MSU: using AI to warn potential victims in social media



**CSU-Pueblo CyberWolves: NCL Cyber Security Games  
SPRING, 2024 NCL Ranked #1 and #3 out of 400+ NCL teams**





## • **Cybersecurity Program Overview**

- **Unique and Interdisciplinary Approach (CJC, CIS, CS)**
- **NSA Center of Academic Excellence-Cyber Defense Designation**
- **ABET aligned curriculum**
- **Degrees: B.S. (479+), M.S. (46+), and Graduate Certificates (STEMPath)**
- **Retention/Graduation: 75-80% Retention Rates & 54 Graduates in FY24**
- **Faculty/Staff: 1 Program Manager, 1 FT Faculty, & 1 Cyber Center Director**
- **Workforce Development: Talent Acquisition for Companies** (Microsoft, Lockheed Martin, Xcel Energies, Bank of America, Plante Moran, etc) Employers consistently state they need/want diverse workforce
- **MSU-Denver Student Demographics**
  - 55% students of color, 32% female, 22% veterans & 50% first-gen
    - **\$30,000 in Scholarships:** 20 students in FY 24
- **MSU-Denver Student Cybersecurity Clubs & Industry Certs**
  - Network+, Security+, Linux+, Open-Source Intelligence(OSINT), & Future Certs in Certified Information Privacy Professional (CIPP) and Computer Hacking Forensic Investigator (CHFI) as well as other Industry Certs
  - **Cybersecurity Center/Range:** Defender/Raider Ops, SOC & Industry Certs
  - **Conclusion-**\$300,000 per year from FY 18- 24 supported a diverse student body with high retention & graduation rates to fill CO workforce gap

## SB18-086 Cybersecurity Summary

For Fiscal Year 2024, PPSC received 300k from the legislature as part of the college's fee for service allocation. 10% (30k) of total funds are earmarked for scholarships for Cybersecurity students.

### FY-24 Funding Highlights:

- **Scholarships:** PPSC awarded 24, \$1,250 scholarships.
- **Faculty:** All other monies funded salaries for three full-time Cybersecurity faculty (2 fully and 1 partially).
- **Credentials:** PPSC Awarded **51 Associate of Applied Science (AAS) degrees** and **51 Certificates in Cybersecurity**.
  - Students earned **20 industry-recognized credentials from CompTIA**

### Completion Trends in Cybersecurity\*

Academic Period	Degree Completers	Certificate Completers
AY 23–24	51	51
AY 22–23	44	38
AY 21–22	27	61
AY 20–21	29	30
AY 19–20	10	35
AY 18–19	1	28
AY 17–18	0	15

\*Since the initiation of SB18-086 funds, PPSC has more than **tripled the number of degrees with a notable increase year over year** and awarded in Cybersecurity – **Certificates have doubled**.

# Expanding Impact Through Strategic Partnerships

## Internships & Partnerships:

- Appropriated funds have been utilized to facilitate student connections with internship sites by planning hiring events, community partner gatherings, and travel related to building community partnerships.
- Partnered with UCCS to secure \$50,000 in new funding through DOD for student internship stipends and support.
- *41 internships provided for Cybersecurity students*

## Additional Grant Funding:

- NSF HSI PUENTE Grant: \$95,000
- DOD/ UCCS Partnership New Grant: \$50,000
- PPSC Foundation Scholarships: \$3,750





**COLORADO MESA**  
UNIVERSITY



**Awarded  
35  
Scholarships**



**Awarded  
14 Degrees/Cert  
ificates**



**Supported  
16 Student  
Internships**



**4 Pursuing  
Cyber Graduate  
Programs**



**100%  
Employed in  
the Field**



**2 Peer-  
reviewed  
Publications**

### **Other Highlights**

- Maintained NSA-approved Center of Academic Excellence in Cyber-Defense (CAE-CD) designation since 2021.
- Hired 1.25 full-time faculty in Cybersecurity and maintained the Cybersecurity Center and various activities.
- 28 Students Enrolled in the Professional Certificate and the minor in Cybersecurity in FY 24-25 – a record.
- Hosted CyberPatriot Cybersecurity summer camp for Mesa County High and Middle School students.
- Sponsored the Security+ workshop and certification for 15 CMU students.
- Sponsored lunch during Rock CS - Rocky Mountain Computer Science Conference for P-12 Educators.
- Supported 4 students travel to Razorhack CTF Cyber competition at the University of Arkansas.
- Supported 2 faculty travel to the World Finals of the International Collegiate Programming Contest in Kazakhstan.

# Western Colorado University

- Information Security emphasis within the Computer Science major (created through the cybersecurity funding support).
- In FY24 37 students (14 freshman, 11 sophomores, 4 juniors and 8 seniors) in the program are served by use of funds for 1.5 FTE faculty.
- In FY24, 35 students received cyber funded scholarships totaling \$95,000.
- Information Security students participate in state and national networking and online seminar opportunities.
- Western awarded NSA CAE-CD designation, (Center of Academic Excellence in Cyber Defense).
- Created vital opportunities for faculty development and salaries in information security.
- Faculty participated in monthly online events and discussions with CAE-CD Colleagues from across the state.
- Enhanced collaboration among cybersecurity faculty statewide has bolstered Western's programs.





# Thank you!

*We are happy to answer any questions.*

