

The graphic features a dark blue silhouette of the state of Pennsylvania. Overlaid on this are several elements: a thick dark blue horizontal bar at the top; a network of yellow circuit lines with small white dots at junctions, extending from the left side across the state; a large, semi-transparent green circular seal on the right side, which is the official seal of the University of Pittsburgh; and a light blue padlock icon with a black keyhole, positioned over the lower right portion of the green seal. The background is filled with a pattern of light blue binary code (0s and 1s).

THE BLUE RIBBON COMMISSION
on Pennsylvania's Election Security

HOSTED BY PITT CYBER

David Hickton
Founding Director
University of Pittsburgh
Institute for Cyber Law, Policy, and Security
@PittCyber



**PITT
CYBER**

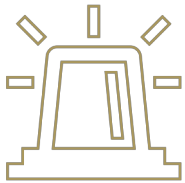
University of Pittsburgh
Institute for Cyber Law,
Policy, and Security

Launched by Pitt's Chancellor Pat Gallagher in January 2017.

University-wide institute providing an interdisciplinary environment for tackling cyber challenges.

Brings the breadth of one of the world's leading public research universities to bear on the critical questions of networks, data, and algorithms – with a focus on the ever-changing gaps among law, policy, and technology.

Our collective of legal, policy, and technical researchers engages with policymakers and industry to create actionable proposals to address current demands and fundamental insights to understand the future as it arrives.



Election Security Threats

“We were attacked in 2016. The target was not ships or airplanes or buildings, but the machinery of our democracy. We will be attacked again. We must act – or leave our democracy at risk.”

Amb. R. James Woolsey, Director of Central Intelligence, 1993-1995

“I expect to see them back in 2018, especially in 2020.”

James Comey, FBI Director, 2013-2017

“If there has ever been a clarion call for vigilance and action against a threat to the very foundation of our democratic political system, this episode is it.”

James Clapper, Director of National Intelligence, 2010-2017

“Our adversaries and strategic competitors probably already are looking to the 2020 US elections as an opportunity to advance their interests. More broadly, US adversaries and strategic competitors almost certainly will use online influence operations to try to weaken democratic institutions, undermine US alliances and partnerships, and shape policy outcomes in the United States and elsewhere.”

Dan Coats, Director of National Intelligence

“The 2018 mid-term and future elections are clearly potential targets for Russian hacking attempts.”

“The American public’s confidence that their vote counts — and is counted correctly — relies on secure election infrastructure.”

Secretary of Homeland Security Kirstjen Nielsen

Pennsylvania's election security is among the most vulnerable in the nation.

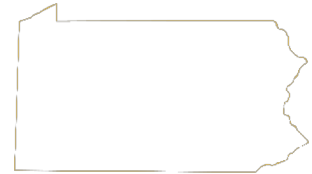
In **2007**, a professor and his graduate student hacked into voting machines used today in PA in under 7 minutes.

More than **80%** of Pennsylvanian's vote on machines that have no verifiable audit trail.

In **2017**, PA was notified that it was one of **21** states whose registration systems Russian hackers tried to penetrate.

PA received a **"D"** grade from a Center for American Progress report assessing state election cybersecurity.

Pennsylvania's Election Security Threats



"Pennsylvania is holding back the whole country and putting it at risk."

J. Alex Halderman, Director, Center for Computer Security and Society, University of Michigan

The Blue Ribbon Commission on Pennsylvania's Election Security

David Hickton – Founding Director, Pitt Cyber; former US Attorney for the Western District of Pennsylvania (co-chair)

Paul McNulty – President, Grove City College; former Deputy Attorney General of the United States; former US Attorney for the Eastern District of Virginia (co-chair)

Jim Brown – Former Chief of Staff to US Senator Robert P. Casey, Jr; former Chief of Staff to Pennsylvania Governor Robert P. Casey

Esther L. Bush – President and CEO, Urban League of Greater Pittsburgh

Mary Ellen Callahan – Former Chief Privacy Officer, US Department of Homeland Security

Susan Carty – President, League of Women Voters of Pennsylvania

Nelson A. Diaz – Retired judge, Philadelphia Court of Common Pleas

Jane Earll – Attorney; former Pennsylvania State Senator

Douglas E. Hill – Executive Director, County Commissioners Association of Pennsylvania

Mark A. Holman – Partner, Ridge Policy Group; former Deputy Assistant to the President for Homeland Security; former Chief of Staff to Pennsylvania Governor Tom Ridge

Ken Lawrence – Vice Chair, Montgomery County Board of Commissioners

Mark A. Nordenberg – Chair of the Institute of Politics, University of Pittsburgh; Chancellor Emeritus of the University; Distinguished Service Professor of Law

Grant Oliphant – President, The Heinz Endowments

Pedro A. Ramos – President and CEO, The Philadelphia Foundation

James C. Roddey – Former Chief Executive, Allegheny County

Marian Schneider – President, Verified Voting; former Pennsylvania Deputy Secretary of State for Elections and Administration

Bobbie Stempfley – Director, CERT Division, Software Engineering Institute, Carnegie Mellon University

David Thornburgh – President and CEO, Committee of Seventy

Sharon Werner – Former Chief of Staff to US Attorneys General Eric H. Holder, Jr. and Loretta E. Lynch

Dennis Yablonsky – Former CEO, Allegheny Conference on Community Development; former Pennsylvania Secretary of Community and Economic Development

Senior Advisors

Charlie Dent – Former US Congressman, 15th District of Pennsylvania

Paul H. O'Neill – 72nd Secretary of the US Treasury

Dick Thornburgh – Former Governor, Pennsylvania; former Attorney General of the United States; former Under-Secretary-General of the United Nations



**Affiliations are provided for identification purposes. Commissioners are serving in their personal capacities.*

The Blue Ribbon Commission on Pennsylvania's Election Security: **GOALS**



Ensure public, media, and policymaker awareness of election security vulnerability as a critical issue for Pennsylvania



Initiate attention for remedying vulnerabilities, including funding and related necessary efforts



Drive consideration of the commission's recommendations for improving Pennsylvania's election security architecture



Place Pennsylvania as a national model for electoral cybersecurity

The Blue Ribbon Commission on Pennsylvania's Election Security: **WHAT WE STUDIED**

The commission released a final study on January 29, providing practical recommendations to state and local Pennsylvania officials to better secure the state's elections.

The assessment included vulnerabilities in the



cybersecurity of voter registration, rolls, and databases



cybersecurity of voting machines, tabulation, and storage



resilience and recovery of Pennsylvania's electoral system following a potential breach

The Blue Ribbon Commission on Pennsylvania's Election Security: **WHAT WE FOUND**

Current election threats
and vulnerabilities



Nation-state adversaries



Vulnerable voting equipment



Vendors and supply chains



Lack of contingency planning

<https://www.nytimes.com/video/opinion/100000005790489/i-hacked-an-election-so-can-the-russians.html>

CHANNELS & SHOWS

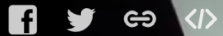


 **Opinion**

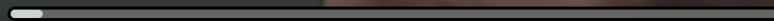
LOG IN

I Hacked an Election. So Can the Russians.

By Matteen Mokalla, Taige Jensen and J. Alex Halderman



0:05



 **Opinion**
4:23  **HD**  

Opinion

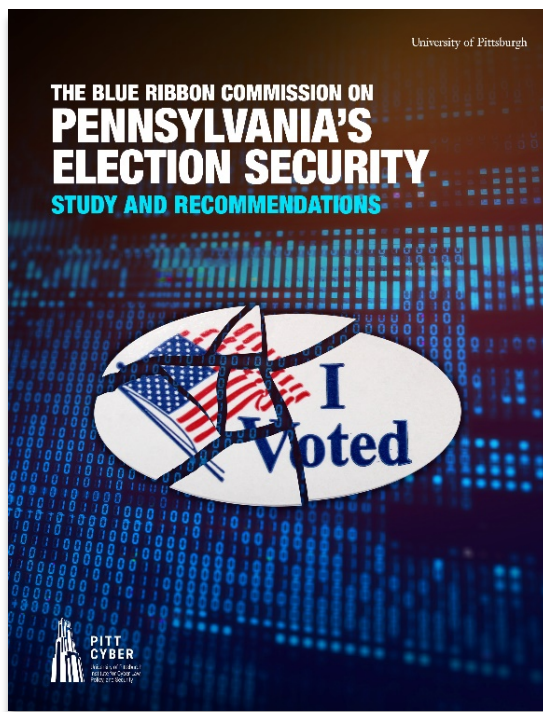
Meet the KGB Spies Who I...

The Seven Commandments...

The Worldwide War on Truth

The Atomic Soldiers

The Blue Ribbon Commission on Pennsylvania's Election Security - **RECOMMENDATIONS**



The most important thing Pennsylvania can do to improve its election security is **implement paper ballots with risk-limiting audits.**

The Blue Ribbon Commission on Pennsylvania's Election Security - **RECOMMENDATIONS**

RECOMMENDATIONS BY RESPONSIBLE OFFICIAL

	State Officials	Local Officials	Federal Officials
Recommendation 1: Replace Vulnerable Voting Machines with Systems Using Voter-Marked Paper Ballots.	X	X	
Recommendation 2: The Pennsylvania General Assembly and the Federal Government Should Help Counties Purchase Secure Voting Systems.	X	X	X
Recommendation 3: Implement Cybersecurity Best Practices throughout Pennsylvania's Election Architecture.	X	X	
Recommendation 4: Provide Cybersecurity Awareness Training for State and Local Election Officials.	X	X	
Recommendation 5: Conduct Cybersecurity Assessments at the State and County Levels.	X	X	
Recommendation 6: Follow Vendor Selection Best Practices in SURE Replacement Procurement and Leverage Auditor General's Findings.	X	X	
Recommendation 7: Employ Risk-Limiting Audits.	X	X	
Recommendation 8: Implement Best Practices throughout Pennsylvania's Cyber Incident Response Planning.	X	X	X
Recommendation 9: Revise the Election Code to Address Suspension or Extension of Elections Due to an Emergency.	X		
Recommendation 10: Bolster Measures Designed to Address Voting Equipment-Related Issues So Voting Can Continue Even in the Event of Equipment Failure.	X	X	
Recommendation 11: Enhance Measures Designed to Address E-pollbook-Related Issues So Voting Can Continue Even in the Event of Equipment Failure.	X	X	

The Blue Ribbon Commission on Pennsylvania's Election Security: **POLITICAL REALITIES**

We could replace our outdated voting machines for \$9.76 for every Pennsylvanian

**\$125
MILLIO
N**

CCAP estimate to replace outdated voting machines

**\$15
MILLIO
N**

Amount in Gov. Wolf's budget

**\$13.5
MILLIO
N**

Congress provided for PA

What You Can Do Today

Urge General Assembly funding for new voting systems

Urge additional federal funding for election security

Ensure Allegheny County replaces its outdated voting systems with hand-marked paper ballots (and ballot-marking devices for accessibility)

Volunteer as a poll worker, especially if you have cybersecurity training

Support continued attention to election security, not just voting machines

Ahead of the 2020 election, let's address Pennsylvania's election security so your vote can count | Opinion

Updated: MAY 2, 2018 — 3:01 AM EDT



© JOSEPH KACZMAREK
Michelle Braga enters the voting booth inside Philadelphia Fire Department's Engine 56 firehouse, Tuesday Nov. 8, 2016, in the Fox Chase section of Philadelphia.

by David Hickton & Paul McNulty, For the Inquirer

Pittsburgh Post-Gazette

Voting safe: Top minds are at work on Pa. election security

Pennsylvania's new commission on election cybersecurity has the potential to put Pennsylvanians' minds at rest and help other states make sure their voting systems are safe and sound. While Russian interference in the 2016 presidential campaign has galvanized interest in election security, foreign hacking is just one of many potential threats. Pennsylvania's system will benefit from a wide-ranging checkup.

Bloomberg

Hack-Resistant Voting Machines Missing as States Prepare for 2018 Vote

By Nafeesa Syeed
May 8, 2018, 4:00 AM EDT Updated on May 8, 2018, 9:49 AM EDT

- Pennsylvania still using voting equipment with no paper trail
- Election recounts aren't an easy option in some key districts

Past piles of hay outside the Pennsylvania Farm Show Complex in Harrisburg, vendors in a meeting hall hawked their latest secure voting technology. Local officials and activists tapped sleek Android screens in a mock election and saw the results documented on printouts.



EDITORIALS

New voting machines will be costly, but necessary

TRIBUNE-REVIEW | Sunday, May 6, 2018, 9:00 p.m.

TRIB LIVE

POLITICO

Pennsylvania experts review election cybersecurity

By TIM STARKS | 05/03/2018 10:00 AM EDT

With help from Eric Geller, Martin Matishak and Li Zhou

ONE BIG ELECTION SECURITY DEVELOPMENT — Top cybersecurity experts today are **launching** a review of election defenses in Pennsylvania, a key swing state that is one of the few still using electronic voting machines widely considered vulnerable to hacking. These e-voting systems are widely considered vulnerable to hacking because they don't produce paper backups. The University of Pittsburgh Institute for Cyber Law, Policy, and Security's Blue Ribbon Commission on Pennsylvania's Election Security is co-led by David Hickton, the former U.S. Attorney for the Western District of Pennsylvania who spearheaded the landmark 2014 indictment of five Chinese military officers accused of hacking U.S. companies. The other co-leader is Paul McNulty, a former deputy attorney general who now serves as president of Grove City College.

The Tribune-Democrat

Serving Greater Johnstown Since 1853

Pitt rolls out commission to limit risk of election hacking

By John Finerty
jfinerty@trib.com May 3, 2018

90.5 WESA

Non-Partisan Commission Forms To Ensure Security In Future Elections

By LUCY PERKINS - MAY 7, 2018
Twitter Facebook Google+ Email



The Herald

Serving the Shenango Valley and Mercer County Area

Pitt eyes voter security board

21 WFMJ

Two university officials leading investigation into PA election security

Posted: May 03, 2018 9:15 PM EDT
Updated: May 09, 2018 9:50 AM EDT

By Natalie Hoetzel, Multi Media Producer **CONNECT**



GROVE CITY, Pa. - Paul McNulty, President of Grove City College, and David Hickton, Founding Director of Pitt Cyber, are leading an independent investigation into Pennsylvania election security.

Pitt Cyber announced the investigation, also known as Blue Ribbon Commission, on Thursday.

The investigation will be funded by a grant from the Heinz Endowments.



Find out more at
www.cyber.pitt.edu/commission