TWELVE NYS EDUCATIONAL TECHNOLOGY ORGANIZATIONS

REGIONAL INFORMATION CENTERS

NEW YORK STATE

REGIONAL INFORMATION CENTERS

K-12 CYBERSECURITY PLANNING

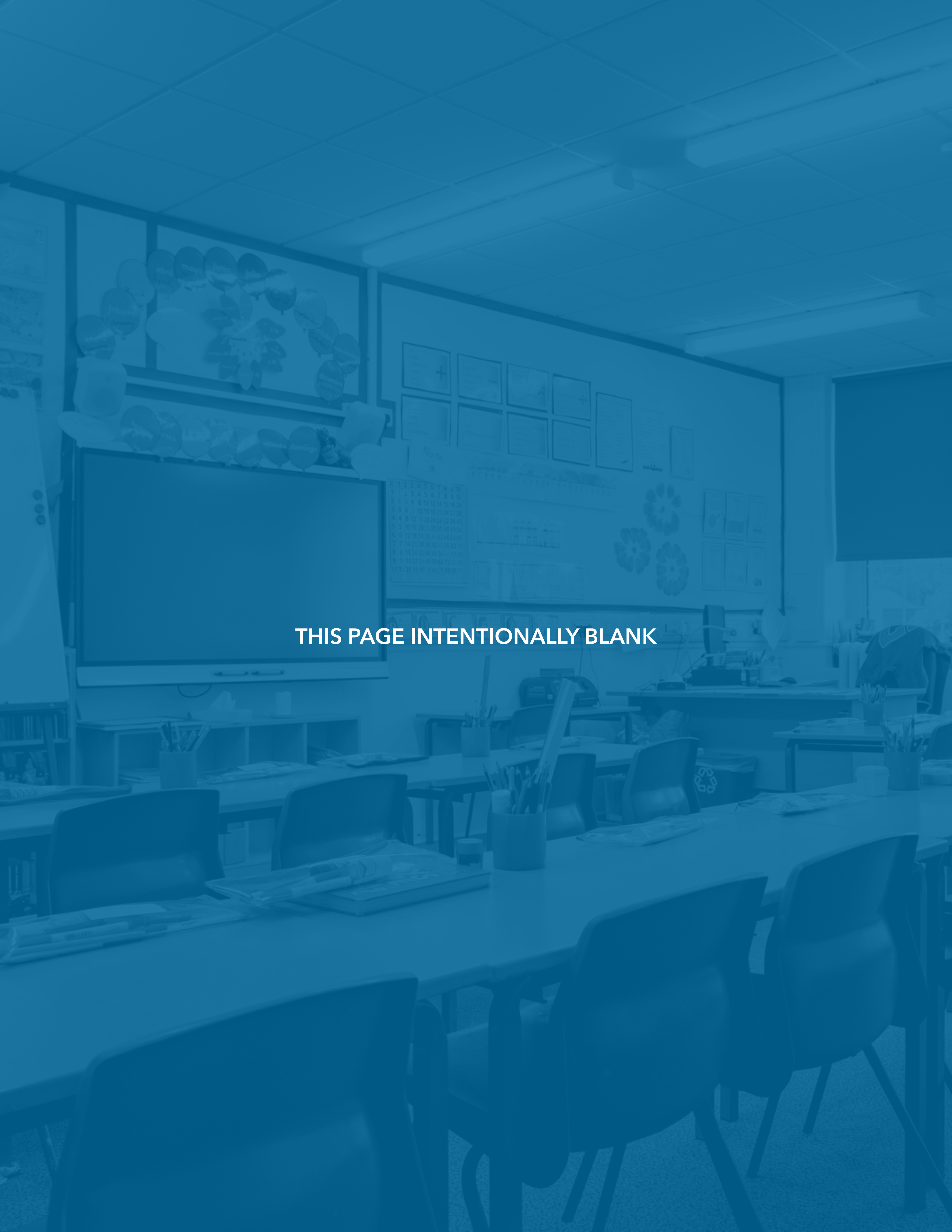
RIC ONE RECOMMENDATIONS AND TOOLS

THIS RESOURCE WAS DEVELOPED BASED ON THE
CYBERSECURITY AND INFRASTRUCTURE SECURITY AGENCY

PROTECTING OUR FUTURE REPORT

OCTOBER 2023

UPDATED TO ALIGN TO CISA'S CPG Version 1.0.1



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REPORT BACKGROUND AND OVERVIEW

The K–12 Cybersecurity Act directed the Cybersecurity and Infrastructure Security Agency (CISA) to report on cybersecurity risks facing schools. The report includes details about challenges facing the sector, field recommendations, and helpful resources. In this RIC One resource, we summarize CISA's recommendations related to cybersecurity planning and infuse related guidance from the RICs.

CISA Report: *Protecting Our Future: Partnering to Safeguard K-12 Organizations From Cybersecurity Treats (January 2023)*

KEY RECOMMENDATIONS

The CISA report includes 3 key recommendations highlighted to the right. The remainder of this resource is primarily focused on the first recommendation (Strategically Mature the District's Cybersecurity Posture and Plan). The continuum below introduces a strategy aligned with this recommendation.

STRATEGICALLY MATURE THE DISTRICT'S CYBERSECURITY POSTURE AND PLAN

RECOGNIZE AND ACTIVELY ADDRESS RESOURCE CONSTRAINTS

FOCUS ON COLLABORATION AND INFORMATION SHARING

MOVE THROUGH THE K-12 CYBERSECURITY CONTINUUM TO MATURE THE DISTRICT'S CYBERSECURITY POSTURE

As educational agencies have limited resources, CISA outlines a three step process to support districts in maturing their cybersecurity posture. First, school districts focus on a small number of prioritized investments. Next, districts progress to Phase 2 and develop a plan that aligns with the Cybersecurity Performance Goals. Finally, in Phase 3, the plan is further developed to align with the NIST CSF. As Part 121 of the Commissioner's Regulations require agencies to adopt a policy that aligns with the NIST CSF Version 1.1, this suggested maturity continuum is particularly helpful to New York State school districts and BOCES. The diagram below provides more information about the three step process. Additionally, on subsequent pages each phase is reviewed in more detail.

Priority Investments

Begin with a **small number of prioritized investments**. CISA recommends agencies focus on:

- Multifactor Authentication
- Patch Management
- Backups Management
- Exposure Management
- Incident Response Plans
- Training Programs

6 PRIORITIES

CISA CPG

Then, **align investments with the** Cybersecurity Performance Goals (**CPG**). Following the release of the Protecting Our Future Report, in March 2023, CISA updated the CPG. In Version 1.0.1, CISA reorganized the CPGs to align more closely with the NIST CSF. This resource has been updated to align with Version 1.0.1.

38 GOALS

NIST CSF

Next, mature your posture by **developing a cybersecurity plan that leverages the NIST Cybersecurity Framework (CSF)**. The current framework outlines 108 subcategories to focus on. **Education Law 2-d requires** NYS educational agencies to adopt a **policy** on data security and privacy that **aligns with** the **NIST Cybersecurity Framework**.

108 SUBCATEGORIES

1

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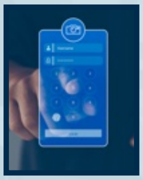
PHASE ONE PRIORITY INVESTMENTS

IMPLEMENT HIGHEST PRIORITY SECURITY CONTROLS

In Phase 1, school districts and BOCES can start to mature their cybersecurity posture by implementing a small number of strategic controls. CISA identifies six important controls in the Protecting Our Future report. These recommended priority areas are described below. To support educational agencies in building on this important first step, each control is aligned to Phase 2 and 3 cybersecurity resources/frameworks (CISA CPG and NIST CSF).

1



IMPLEMENT MULTIFACTOR AUTHENTICATION

Multifactor authentication (MFA) is a method of logging into a system with two unique forms of verification (or factors) that are used to confirm the user. MFA is highly effective at protecting accounts and data, as generally bad actors (or criminals) are not able to bypass the second authentication requirement. Districts can develop strategic MFA implementation plans that prioritize highest risk systems, such as virtual private networks, and high-priority accounts.

CISA CPG 2.H | NIST CSF PR.AC-7

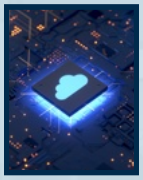
2

PATCH MANAGEMENT

Districts should prioritize patch management, as it is one of the most cost-effective practices an organization can adopt to enhance the agency's security posture. Specifically, technology staff should patch known vulnerabilities in a timely manner. It is particularly important to apply patches to those systems that house sensitive data. Districts can leverage CISA's free Vulnerability Scanning service to receive weekly reports on vulnerabilities.

CISA CPG 1.E | NIST CSF PR.IP-12

3



BACKUPS MANAGEMENT

School districts should back up all critical systems, audit backups for completion, and test the restoration of data. Backups should be stored offline and disconnected from the network. Isolating backup servers prevents the spread of malware to these servers via compromised domain credentials. These practices should be documented in the district's incident response plan.

CISA CPG 2.R | NIST CSF PR.IP-4

4

EXPOSURE MANAGEMENT

Cyber attackers use tools similar to search engines to locate and exploit Internet-connected systems. Districts should ensure that solutions accessible via the internet are not exploitable. Appropriate compensating controls should be implemented to prevent abuse related to services that must be exposed. Districts should have plans in place to support routine assessment and mitigation of these exposures.

CISA CPG 2.Q & 2.W | PR.AC-3, PR.IP-3, PR-PT-4

5

CYBER INCIDENT RESPONSE PLANS

A Cyber Incident Response Plan is a documented procedure that prepares organizations to quickly and efficiently identify, respond to and remediate cybersecurity and data issues. These plans must be appropriately maintained and tested. Districts can use table top exercises to strengthen the response team's readiness and the district's security posture.

CISA CPG 2.S | NIST CSF PR.IP-9-10

6

TRAINING PROGRAMS

Robust cybersecurity plans focus on process, people, and technology. Staff and students need security awareness training. Additionally, employees must be educated regarding laws and district policies that protect sensitive information. In New York State this best practice is required. Specifically, the Part 121 regulations require that training be provided annually to all staff and officials with access to protected data.

CISA CPG 2.I | NIST CSF PR.AT-1

2

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PHASE TWO CYBERSECURITY PERFORMANCE GOALS

CYBERSECURITY PERFORMANCE GOALS (CPG)

During Phase 2, districts further develop cybersecurity plans using CISA's Cybersecurity Performance Goals (CPG). CISA, in partnership with NIST, developed this set of security practices to supplement the NIST CSF. The NIST CSF is a more complex and comprehensive framework. In Phase 2, agencies with limited cybersecurity expertise, resources, and capabilities develop a plan aligned with CISA's 38 security practices (CPGs) before developing a plan aligned with the 108 NIST CSF controls. The 38 CPGs are listed below. CISA has additional resources available to support agencies using the CPG. These resources include recommendations about each CPG. Additionally, details about the cost, impact, and complexity are provided. To access more information and tools related to each of the goals visit: https://www.cisa.gov/cross-sector-cybersecurity-performance-goals.

IDENTIFY	1.A	Asset Inventory	ID.AM-1, ID.AM-2, ID.AM-4, DE.CM-1, DE.CM-7
	1.B	Organization Cybersecurity Leadership	ID.GV-1, ID.GV-2
	1.C	OT Cybersecurity Leadership	ID.GV-1, ID.GV-2
	1.D	Improving IT and OT Cybersecurity Relationships	ID.GV-2, PR.AT-5
	1.E	Mitigating Known Vulnerabilities	ID.RA-1, PR.IP-12, DE.CM-8, RS.MI-3, ID.RA-6, RS.AN-5
	1.F	Third-Party Validation of Cybersecurity Control Effectiveness	ID.RA-1, ID.RA-3, ID.RA-4, ID.RA-5, ID.RA-6
	1.G	Supply Chain Incident Reporting	ID.SC-1, ID.SC-3
	1.H	Supply Chain Vulnerability Disclosure	ID.SC-1, ID.SC-3
	1.H	Vendor/Supplier Cybersecurity Requirements	ID.SC-3
PROTECT	2.A	Changing Default Passwords	PR.AC-1
	2.B	Minimum Password Strength	PR.AC-1
	2.C	Unique Credentials	PR.AC-1
	2.D	Revoking Credentials for Departing Employees	PR.AC-1, PR.IP-11
	2.E	Separating User and Privileged Accounts	PR.AC-4
	2.F	Network Segmentation	PR.AC-5, PR.PT-4
	2.G	Detection of Unsuccessful Login Attempts	PR.AC-7
	2.H	Phishing-Resistant Multifactor Authentication	PR.AC-7, PR.AC-1
	2.I	Basic Cybersecurity Training	PR.AT-1
	2.J	OT Cybersecurity Training	PR.AT-2, PR.AT-3, PR.AT-5
PROTECT	2.K	Strong and Agile Encryption	PR.DS-2
	2.L	Secure Sensitive Data	PR.DS-1, PR.DS-5
	2.M	Email Security	PR.DS-5, PR.AC-7
	2.N	Disable Macros by Default	PR.IP-1, PR.IP-3
	2.O	Document Device Configurations	PR.IP-1
	2.P	Document Network Topology	PR.IP-1, ID.AM-3
	2.Q	Hardware & Software Approval Process	PR.IP-3
	2.R	System Backups	PR.IP-4
	2.S	Incident Response Plans	PR.IP-9, PR.IP-10
	2.T	Log Collection	PR.PT-1
	2.U	Secure Log Storage	PR.PT-1
	2.V	Prohibit Connection of Unauthorized Devices	PR.PT-2
	2.W	No Exploitable Services on the Internet	PR.AC-3
	2.X	Limit OT Connections to Public Internet	PR.PT-4, PR.AC-5
DETECT	3.A	Detecting Relevant Threats and TTPs	ID.RA-2, ID.RA-3, DE.CM-1
RESPOND	4.A	Incident Reporting	RS.CO-2, RS.CO-4
	4.B	Vulnerability Disclosure/Reporting	RS.AN-5
	4.C	Deploy Security.txt Files	RS.AN-5
RECOVER	5.A	Incident Planning and Preparedness	RC.RP-1, PR.IP-9, PR.IP-10

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PHASE THREE CYBERSECURITY FRAMEWORK

NIST CYBERSECURITY FRAMEWORK (NIST CSF)

During Phase 3, districts develop a cybersecurity plan that leverages the NIST Cybersecurity Framework. These plans align with the 108 NIST CSF controls, define a target maturity state, and identify actions that will be implemented to mature the district's security posture. Educational agencies are required by the Part 121 regulations to adopt a policy that aligns with NIST CSF. Below is a list of security practices developed by the RICs that align with the framework. To further explore the CSF visit: https://www.nist.gov/cyberframework.

IDENTIFY	ID.AM-1	Physical Devices Inventoried
	ID.AM-2 ID.AM-4 ID.AM-5	Softwares and Systems Inventoried
		System Criticality Ratings and Requirements Documented
	ID.AM-3	Data Flows Documented
	ID.AM-6 ID.GV-2	Staff Responsibilities Documented
		Third-Party Responsibilities Documented
	ID.BE-I-5	Business Environment Documented
	ID.GV-1	ED Law 2-d Policy Adopted
	ID.GV-3	Complaint Practices Documented
	ID.GV-4	Security Meetings Structure
	ID.RA-1	Vulnerabilities Documented
	ID.RA-2	Cyber Alerts Received
	ID.RA-3-6	Risk Registry Maintained
	ID-RM-1	Risk Management Processes Documented
	ID-RM-2-3	Risk Tolerance Documented
	ID.SC-1-5	Third-Party Risk Management Processes Defined
	ID.SC-3	Contractual Safeguards Implemented

PROTECT	PR.AC-1 PR.AC-4 PR.AC-6	On/Off-boarding Processes Documented
		System Account Managers Identified
		Permissions Assigned Based on Duties
	PR.AC-2	Critical Infrastructure Physically Protected
	PR.AC-3	Remote Access Processes Established
	PR.AC-5	Network Traffic Appropriately Segmented
	PR.AC-7	Risk-based Authentication Requirements (MFA)
	PR.AT-1-5	Training Plans Established
	PR.AT-3	Third-Party Responsibilities in Contract Terms

PROTECT	PR.DS-1	Encryption - Portable Devices
	PR.DS-2	Encryption - Externally Accessible Systems
	PR.DS-3	Asset Management Process
	PR.DS-4	Redundant Equipment and Processes
	PR.DS-5	Data Masking Techniques Applied
	PR.DS-6	Anti-malware and Preboot Protections
	PR.DS-7	Separate System Test Environments
	PR.DS-8	Hardware Examined Prior to Installation
	PR.IP-1	System Baseline configurations documented
	PR.IP-2	System Life Cycle Best Practices Followed
	PR.IP-3	Change Control Process Documented
	PR.IP-4	System Backups Performed, Logged & Tested
	PR.IP-5	Environmental Controls in Server Rooms
	PR.IP-6	Data Destruction Procedures Established
	PR.IP-7-8	Data Security Improvement Plan Maintained
	PR.IP-9-10	Incident Response Plan Developed and Tested
	PR.IP-11	On-boarding Training Developed
	PR.IP-12	Vulnerability Management Plan Defined
	PR.MA-1-2	Maintenance Log Maintained
	PR.PT-1	Critical System Logs Reviewed
	PR.PT-2	Removable Media Protocols Documented
	PR.PT-3	Systems Configured - Only Necessary Capabilities
	PR.PT-4	Multi-layered Network Protections
	PR.PT-5	Resiliency Mechanisms

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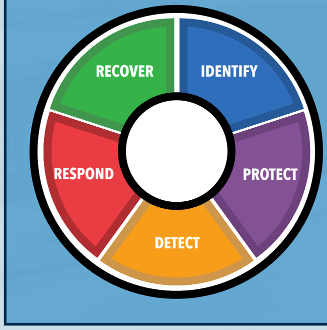
PHASE THREE CYBERSECURITY FRAMEWORK

NIST CYBERSECURITY FRAMEWORK (NIST CSF)

DETECT	DE.AE-1	Environment Baselines Established
	DE.AE-2 DE.AE-3 DE.AE-4 DE.AE-5	Detected Events Analyzed
		Event Data Aggregated and Correlated
		Event Impact Determined
		Alert Thresholds Established
	DE.CM-1	Network Monitored
	DE.CM-2	Physical Environment Monitored
	DE.CM-3	Personnel Activity Monitored
	DE.CM-4 DE.CM-5	Malicious Code Detected
		Unauthorized Mobile Code Detected
	DE.CM-6 DE.CM-7	Service Provider Activity Monitored
		Connections, Devices, Software Monitored
	DE.CM-8	Vulnerability Scans Performed
	DE.DP-1	Detection Responsibilities Established
	DE.DP-2	Detection Activities Match Requirements
	DE.DP-4	Event Detection Communicated
	DE.DP-3 DE.DP-5	Detection Processes Tested
		Detection Processes Improved

RESPOND	RS.RP-1	Response Plan Executed During/After Incident
	RS.CO-1 RS.CO-4	Personnel Know Roles When Response is Needed
		Stakeholders Coordination Consistent with Plans
	RS.CO-2	Incidents Reported Consistent with Criteria
	RS.CO-3 RS.CO-5	Information Shared Consistent with Plans
		Voluntary Information Sharing Occurs
	RS.AN-1 RS.AN-2 RS.AN-3	Notifications Investigated
		Incident Impact Understood
		Forensics Perrformed
	RS.AN-4	Incidents Categorized Consistent with Plans
	RS.AN-5	Vulnerabilities Management Plan Documented
	RS.MI-1 RS.MI-2 RS.MI-3	Incidents Contained and Mitigated
		Vulnerabilities Mitigated/ Accepted Risk Documented
	RS.IM-1 RS.IM-2	Response Plans Incorporate Lessons Learned
		Response Strategies Updated

NIST CYBERSECURITY FRAMEWORK
VERSION 1.1



5 FUNCTIONS

23 CATEGORIES

108 SUBCATEGORIES

RECOVER	RC.RP-1	Recovery Plan Executed During/After Incident
	RC.IM-1 RC.IM-2	Response Plans Incorporate Lessons Learned
		Response Strategies are Updated
	RC.CO-1	Public Relations Managed
	RC.CO-2	Reputation Repaired After Incident
	RC.CO-3	Recovery Activities Communicated

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