



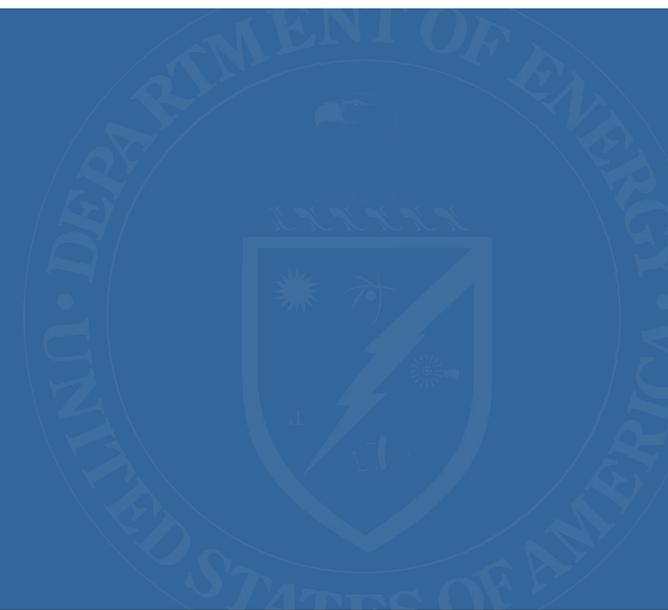
U.S. DEPARTMENT OF  
**ENERGY**

Office of  
Cybersecurity, Energy Security,  
and Emergency Response

# The Energy Threat Landscape

Alyse Taylor-Anyikire, PhD - SLTT Program Manager

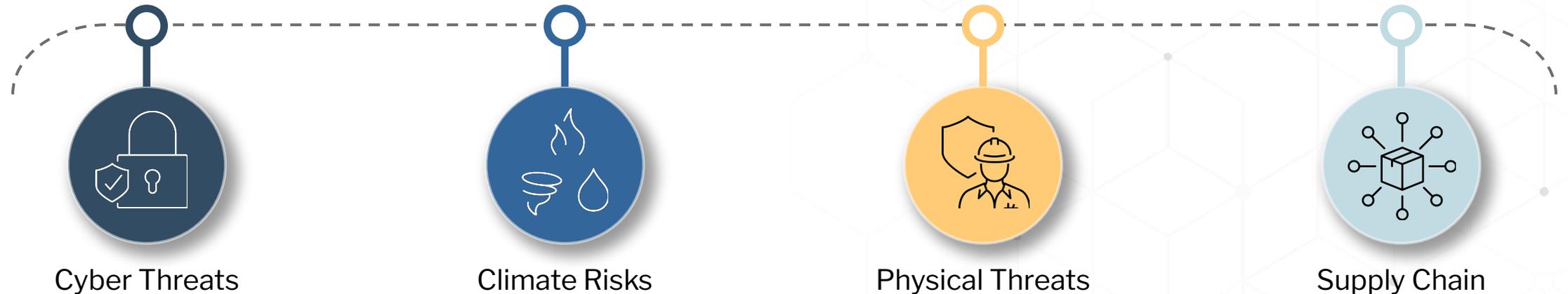
October 25, 2023



# CESER Mission

Strengthen the security and resilience of the U.S. energy sector from cyber, physical, and climate-based risks and disruptions.

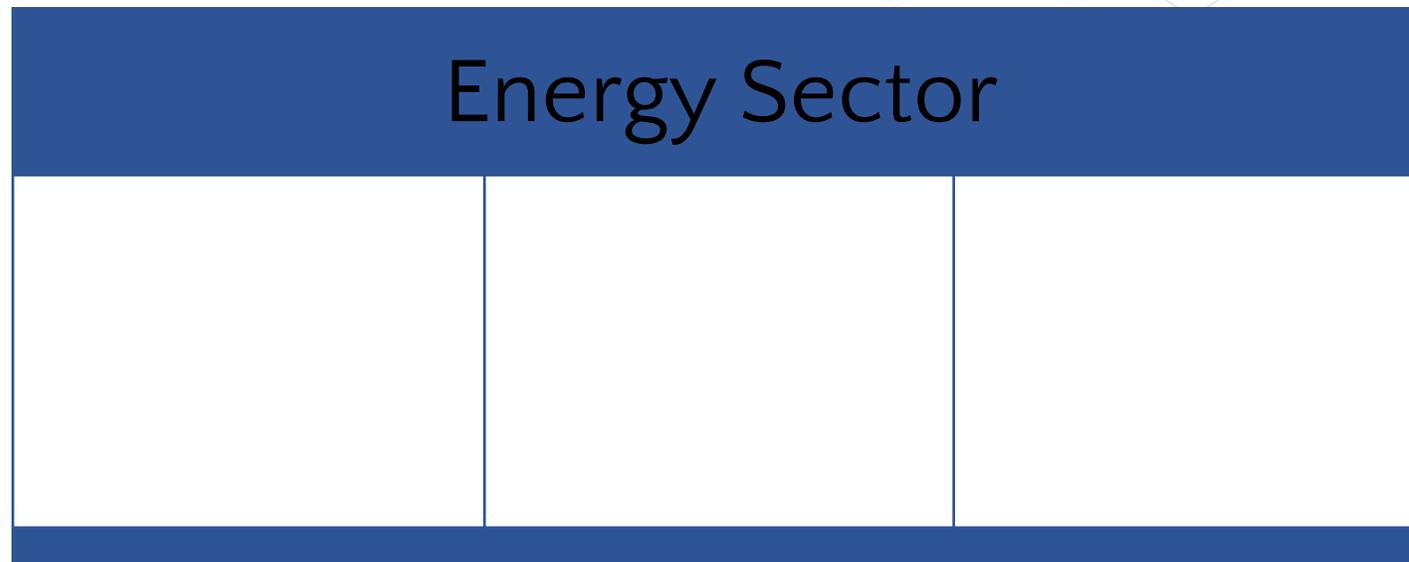
## Evolving Threats to Energy Infrastructure



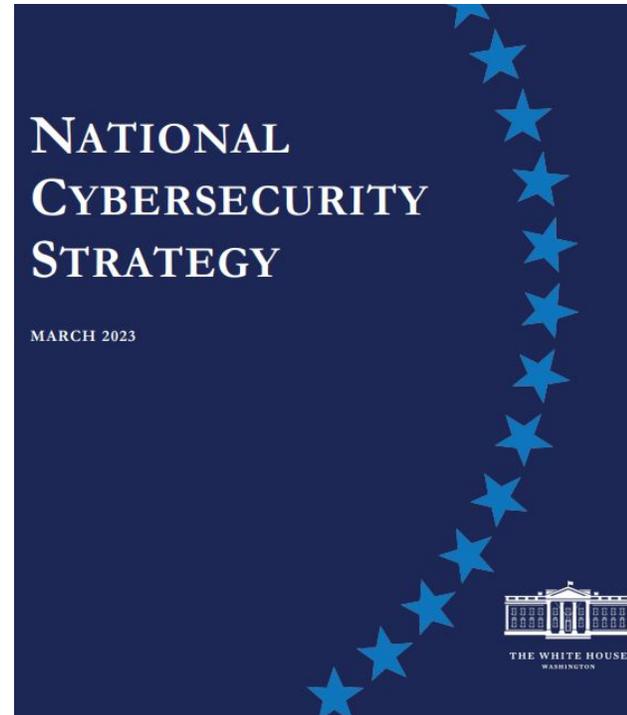
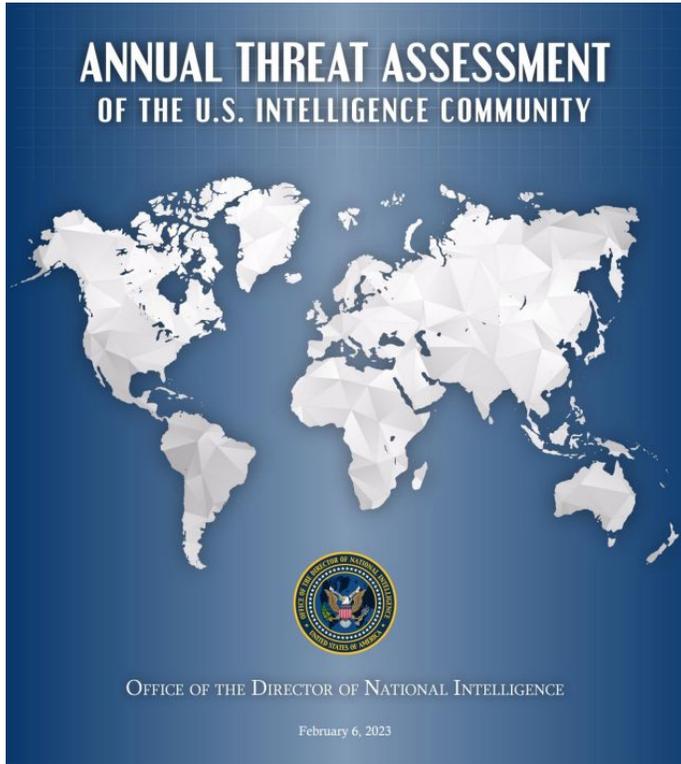
# Energy Security

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**Energy Security ensures a secure and reliable flow of energy across the nation.**



# Cybersecurity Threats



Joint Cybersecurity Advisory

TLP: CLEAR

NATIONAL SECURITY AGENCY  
UNITED STATES OF AMERICA

CYBERSECURITY & INFRASTRUCTURE  
SECURITY AGENCY  
CISA

DEPARTMENT OF  
HOMELAND SECURITY  
UNITED STATES OF AMERICA

Australian Government  
Australian Signals Directorate

ACSC Australian  
Cyber Security  
Centre

Canada  
Communications  
Security Establishment  
Canadian Centre  
for Cyber Security

Centre de la sécurité  
des télécommunications  
Centre canadien  
pour la cybersécurité

National Cyber  
Security Centre  
PART OF THE GCSB

National Cyber  
Security Centre  
a part of GCHQ

People's Republic of China State-Sponsored Cyber  
Actor Living off the Land to Evade Detection

# Physical Security Threats

- Rogue actors and domestic violent extremists are targeting critical energy infrastructure
- Of the physical security incidents shared with E-ISAC between 2020-2022, 3% resulted in outages or other grid impacts.
- Notable increase in repeat and clustered incidents

 CNN

[A vulnerable power grid is in the crosshairs of domestic extremist groups](#)

... fired at two power substations in Moore County, North Carolina, ... In 2022 there were 25 “actual physical attacks” reported on power...



 The New York Times

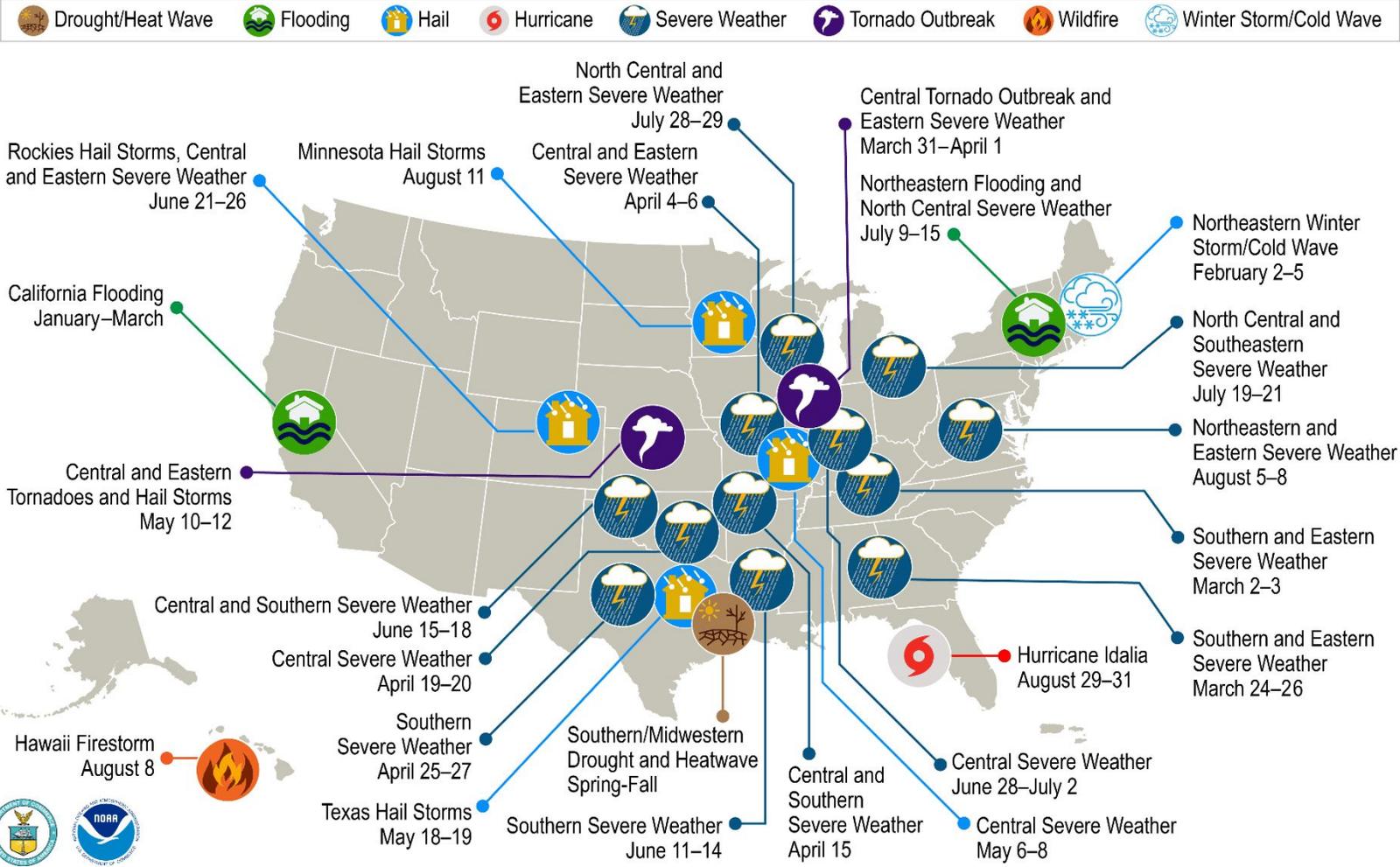
[Pair Charged With Plotting to Attack Baltimore Electrical Grid](#)

WASHINGTON – Federal law enforcement officials have arrested two ... the plot to jarring details of her personal and physical travails.



# Climate Based Risks

## U.S. 2023 Billion-Dollar Weather and Climate Disasters



This map denotes the approximate location for each of the 24 separate billion-dollar weather and climate disasters that impacted the United States through September 2023.

# Collaboration and Coordination is Essential

State, Local, Tribal, and Territorial (SLTT) Governments



Energy Government Coordinating Council (EGCC)



NASEO NARUC NGA

Industry Councils



Electricity Subsector Coordinating Council

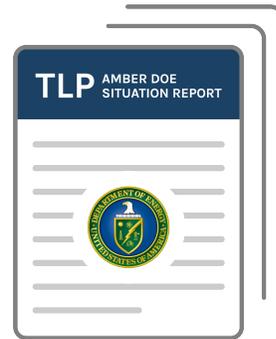


# Information Sharing Across the Energy Sector

## Information Sharing and Analysis Centers (ISAC)



**Energy Emergency Assurance Coordinator (EEAC) Program** facilitates 2-way information sharing between DOE and states leading up to and during an energy disruption or emergency

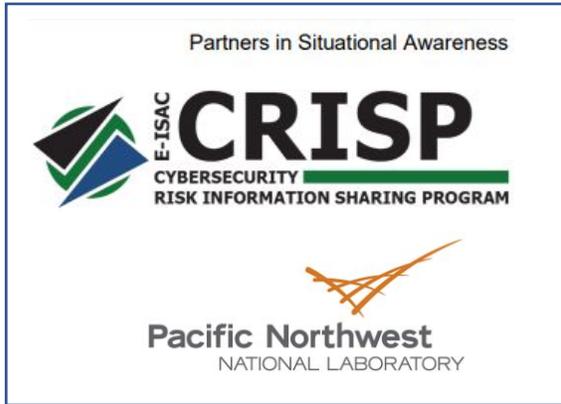


## Call to Action

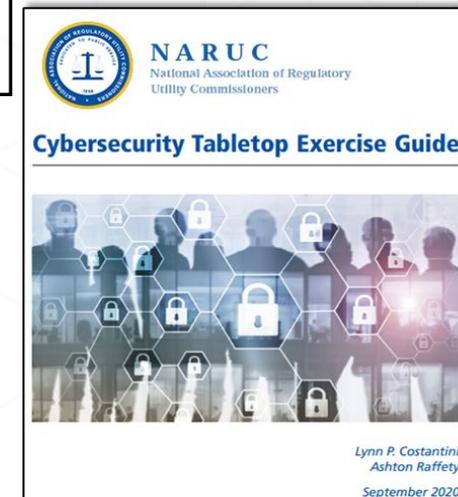
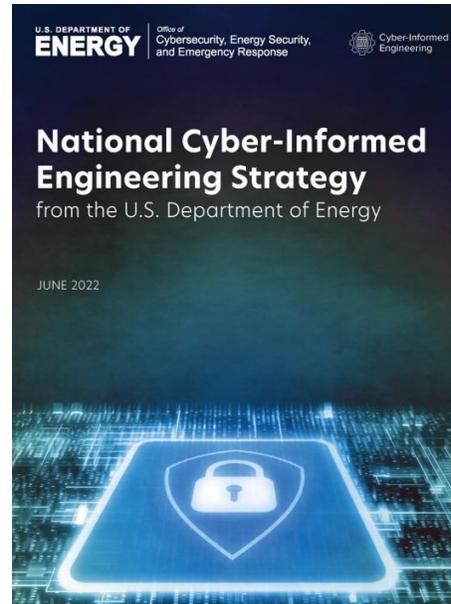
- Ask fusion center for briefings (class or unclass.)
- Lead or participate in exercises

# CESER's Cybersecurity Efforts

## Tools and Technology



## Capacity Building



# CESER Supported Resources



**State Action Guide for Energy Resilience Projects Under FEMA's Building Resilient Infrastructure and Communities (BRIC) Program and Other Hazard Mitigation Assistance (HMA) Programs**

**Quick Guide**

November 2022

**NASEO**  
National Association of State Energy Officials

U.S. DEPARTMENT OF ENERGY  
Office of Cybersecurity, Energy Security, and Emergency Response

[NASEO BRIC Quick Guide](#)

**Energy Security Planning Resource Hub**

Office of Cybersecurity, Energy Security, and Emergency Response

Office of Cybersecurity, Energy Security, and Emergency Response » Energy Security Planning Resource Hub

Our energy infrastructure is vulnerable to a variety of natural and manmade threats and hazards. Across the nation, state and local officials are partnering with owners and operators to reduce risks and vulnerabilities to critical energy infrastructure and safeguard public safety through energy security planning.

Energy security planning ensures a reliable and resilient supply of energy through efforts to identify, assess, and mitigate risks to energy infrastructure and to prepare for, respond to, and recover from events that disrupt energy supply. State energy security plans (SESP) are an essential part of states' energy security planning and describe their energy landscape, people, processes, and energy resilience strategy. The plans detail how a state, working with energy partners, can secure its energy infrastructure against physical and cybersecurity threats; mitigate the risk of disruptions; enhance the response to and recovery from energy disruptions; and ensure that the state has secure, reliable, and resilient energy infrastructure.

**State, Local, Tribal, and Territorial (SLTT) Program Homepage**  
Click here to learn more

**State and Regional Energy Risk Profiles**  
The profiles show natural and man-made hazards to energy infrastructure, as well as the frequency and magnitude of their impacts.  
[Learn more](#)

**DOE Energy Emergency Response Playbook**  
The playbook provides states and territories with a framework, guidance and templates to aid in the development of their response plans.  
[Learn more](#)

**State Energy Security Plan (SESP) Resources**  
Includes guidance on how states can meet plan provisions and resources for states to "drop-in" to their energy security plans and customize as needed.  
[Learn more](#)

**Assessment of Capabilities in Energy Security (ACES) Tool**  
ACES is a self-assessment tool that guides a comprehensive evaluation of existing energy security and emergency response capabilities.  
[Learn more](#)

[Energy Security Planning Resource Hub](#)

**State of West Virginia ENERGY SECTOR RISK PROFILE**

U.S. DEPARTMENT OF ENERGY  
Cybersecurity, Energy Security, and Emergency Response

This State Energy Risk Profile examines the relative magnitude of the risks that the state of West Virginia's energy infrastructure routinely encounters in comparison with the probable impacts. Natural and man-made hazards with the potential to cause disruption of the energy infrastructure are identified. Certain natural and adversarial threats, such as cybersecurity, electromagnetic pulse, geomagnetic disturbance, pandemics, or impacts caused by infrastructure interdependencies, are ill-suited to location-based probabilistic risk assessment as they may not adhere to geographic boundaries, have limited occurrence, or have limited historic data. Cybersecurity and other threats not included in these profiles are ever present and should be included in state energy security planning. A complete list of data sources and national level comparisons can be found in the Data Sources document.

**West Virginia Risks and Hazards Overview**

- The natural hazard that caused the greatest overall property loss between 2009 and 2019 was **Flooding** at \$28 million per year (leading cause nationwide at \$12 billion per year).
- West Virginia had 133 Major Disaster Declarations, 0 Emergency Declarations, and 0 Fire Management Assistance Declarations for 13 events between 2013 and 2019.
- West Virginia registered 15% fewer Heating Degree Days and 36% greater Cooling Degree Days than average in 2019.
- There is 1 Fusion Center located in Charleston.

**Annualized Frequency of and Property Damage Due to Natural Hazards, 2009 – 2019**

Hazard	Annualized Frequency	Property Damage - Annualized (\$Million per year)
Drought	0	\$0
Earthquake (> 3.5 M)	0	\$0
Extreme Heat	2	\$0
Flood	36	\$28
Hurricane	0	\$0
Landslide	1	\$0
Thunderstorm & Lightning	75	\$9
Tornado	2	\$1
Wildfire	<1	\$0
Winter Storm & Extreme Cold	53	\$4

**West Virginia State Facts**

POPULATION: 1.81 M  
HOUSING UNITS: 0.89 M  
BUSINESS ESTABLISHMENTS: 0.04 M

ENERGY EMPLOYMENT: 49,539 jobs  
PUBLIC UTILITY COMMISSION: Public Service Commission of West Virginia  
STATE ENERGY OFFICE: West Virginia Office of Energy  
EMERGENCY MANAGEMENT AGENCY: West Virginia Division of Emergency Management

AVERAGE ELECTRICITY RATES: 8.72 cents/kWh  
ENERGY EXPENDITURES: \$4,111/capita  
ENERGY CONSUMPTION PER CAPITA: 416 MMBtu (10th highest out of 50 states and Washington, D.C.)  
GDP: \$77.4 billion

**ANNUAL ENERGY CONSUMPTION**  
ELECTRIC POWER: 33,650 GWh  
COAL: 26,800 MStn  
NATURAL GAS: 99 Bcf  
MOTOR GASOLINE: 16,700 Mbbbl  
DISTILLATE FUEL: 11,700 Mbbbl

**ANNUAL ENERGY PRODUCTION**  
ELECTRIC POWER GENERATION: 37 plants, 63.9 TWh, 15.5 GW total capacity  
Coal: 10 plants, 58.2 TWh, 13.1 GW total capacity  
Hydro: 12 plants, 1.7 TWh, 0.4 GW total capacity  
Natural Gas: 4 plants, 2.2 TWh, 1.3 GW total capacity  
Nuclear: 0 plants  
Petroleum: 1 plant, 0.1 TWh, 0.0 GW total capacity  
Wind & Solar: 6 plants, 1.6 TWh, 0.7 GW total capacity  
Other sources: 4 plants, 0.0 TWh, 0.1 GW total capacity  
COAL: 92,800 MStn  
NATURAL GAS: 2,160 Bcf  
CRUDE OIL: 16,700 Mbbbl  
ETHANOL: 0 Mbbbl

Data from: EIA (2018, 2019)

Produced by Department of Energy (DOE), Office of Cybersecurity, Energy Security, and Emergency Response (CESER) MARCH 2021 PAGE 1

[SLTT Program Resource Library | Department of Energy](#)

# Cyber Baselines Project

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- NARUC launched a CESER supported effort to establish a set of cybersecurity baseline principles for distribution systems and distributed energy resources (DERs).
- NARUC established a public-private committee so a collaborative approach can be taken to identify and define cybersecurity best practices for electric distribution systems and DERs.
- Participants include Commissioners, Commission staff, federal partners, trade associations and utilities



# CESER SLTT Contact Information



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[energy.gov/CESER](https://energy.gov/CESER)

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# 40124: Rural and Municipal Utility Advanced Cybersecurity Grant and Technical Assistance (RMUC) Program

**Funding:** \$250 Million over 5 years (FY22-26)

## **Objectives:**

1. Deploy cybersecurity technology, operational capability, or services that enhance the security posture of electric utilities through improvements in the ability to **protect** against, **detect**, **respond** to, or **recover** from a **cybersecurity threat**.
2. Increase the participation of eligible entities in cybersecurity **threat information sharing programs**.

**Training:** Host six free 3-day cybersecurity training opportunities for technical practitioners working for utility asset owners and operators, with a focus on ICS/OT cybersecurity.

**Funding Opportunity Announcement (FOA):** Released later this year to provide funding to enable eligible utilities to assess cybersecurity risks, purchase technology solutions, and improve the cybersecurity capabilities of their staff.

