

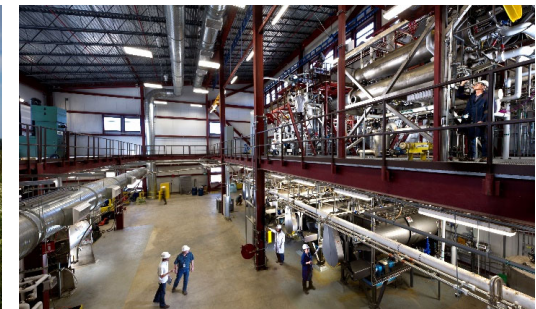
U.S. DEPARTMENT OF
ENERGY

Office of
ENERGY EFFICIENCY &
RENEWABLE ENERGY

Bioenergy Cybersecurity Workshop

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Energy Efficiency and Renewable Energy Guiding Principles

Accelerate the research, development, demonstration, and deployment (RDD&D) of innovative technologies that will transition Americans to a 100% clean energy economy no later than 2050 and ensure the clean energy economy benefits all Americans.

EERE Mission

Keys to Ensure the Greatest Impact



Environmental Justice and Equity



Diversity in STEM



Workforce Development



State and Local Partnerships

EERE Program Priorities

100% decarbonized electric grid by 2035

Decarbonize transportation across all modes

Decarbonize energy intensive industries

Reduce the carbon footprint of buildings

Enable a net-zero agricultural sector

Cyber Security R&D for EERE Technologies



EERE Cybersecurity Multiyear Program Plan

Report to Congress
Revised May 2021

United States Department of Energy
Washington, DC 20585

- Accelerate cybersecurity R&D to strengthen technologies and systems that are critical to transportation, buildings, renewable power, and manufacturing, which are increasingly interconnected and vulnerable.
- Empower EERE stakeholders to better identify, protect, detect, respond to, and recover from evolving cyber threats and vulnerabilities through R&D focused on cybersecurity of energy delivery systems.
- Facilitate robust engagement and partnership with industry, academic, and government stakeholders to ensure EERE's early-stage research accurately tracks the dynamic needs of operational technology cybersecurity without duplicating ongoing efforts.

<https://www.energy.gov/eere/articles/eere-cybersecurity-multiyear-program-plan>

EERE Cyber Security Goals

- **Accelerate cyber resilience R&D of EERE operational technologies**
 - **Improve cybersecurity defenses and resilience.** Enhance EERE stakeholders' ability to *detect* and *protect* against cyber threats and vulnerabilities. Develop metrics and consequence analysis to prioritize future cyber resilient R&D opportunities.
 - **Mitigate vulnerabilities.** Improve capability to *respond* to threats and mitigate vulnerabilities in a timely manner. Identify actionable cyber defense capabilities for EERE stakeholders and validate solutions.
 - **Next-generation cyber resilient technologies.** Defend against evolving cyber threats by designing new EERE technologies with cybersecurity as a requirement, such as adaptive and self-healing technology solutions and systems resilient to cyberattacks.

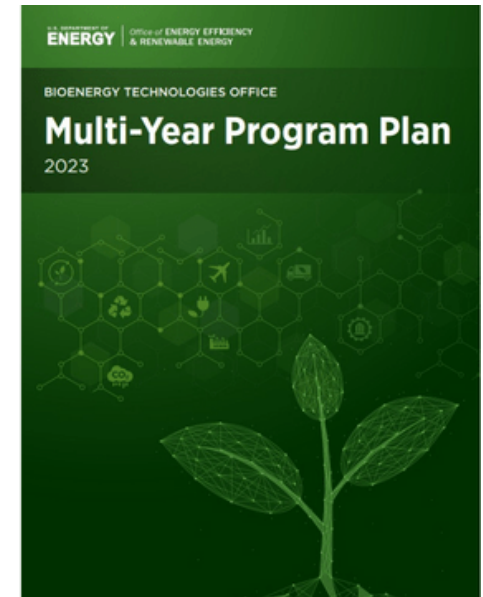
EERE Cyber Security Goals

- **Increase EERE stakeholder cybersecurity awareness**
 - **Improve cybersecurity best practices.** EERE stakeholders must improve their ability to *identify* critical EERE cyber technology threats, vulnerabilities and defenses through R&D, training, assessments, adopting and implementing cybersecurity risk management best practices.
 - **Enhance EERE technology cybersecurity maturity.** EERE stakeholders will research, develop, implement, and assess (red team) cybersecurity best practices to *protect* EERE technology, including cybersecurity maturity and tools.
 - **Identify opportunities for EERE stakeholder participation in cyber incident response exercises.** Enhance understanding of EERE stakeholder cyber exercise requirements to advanced preparedness and ability to rapidly *recover* from cyberattacks, including incident response and recovery plans and engagement with appropriate sector-specific agencies (SSAs).

Bioenergy Technologies Office (BETO)

BETO 2023 Multi-Year Program Plan

1. Decarbonize the transportation sector through RD&D to produce cost-effective, sustainable aviation and other strategic fuels
2. Decarbonize the industrial sector through RD&D to produce cost-effective and sustainable chemicals, materials, and processes utilizing biomass and waste resources
3. Develop cost-effective, sustainable biomass and waste utilization technologies and innovative approaches contributing to the decarbonization of the agriculture sector...or other beneficial uses



Cybersecurity and the Bioeconomy Supply Chain

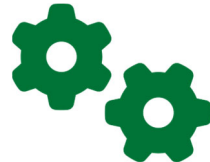
- Bioenergy and bioproducts rely on data collection, computing, automation, and other cyber vulnerable systems along the supply chain.



Feedstock Supply



Feedstock Logistics



Feedstock Conversion



Distribution



End Use



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Learn more about BETO: energy.gov/bioenergy

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BETO Critical Program Areas

