Fiscal Year 2024 Annual Performance Report

U.S. Department of ENERGY™

Contents

Introduction

The *Fiscal Year (FY) 2024 DOE Annual Performance Report* contains details of the Department of Energy's (DOE) program performance, showing the historical targets and results from FY 2020 through FY 2024 and performance targets for FY 2024. It fulfills the statutory requirements in the Government Performance and Results Act (GPRA) of 1993 and the GPRA Modernization Act of 2010 related to production of an annual report on past program performance achieved, and an annual performance plan with goals to define the level of performance to be achieved for the current fiscal years. Performance targets for FY 2020 through FY 2024 reflect enacted appropriations.

Mission

Strengthen the Nation's prosperity and security by addressing energy, environmental, climate, and nuclear challenges through transformative science, technology, and infrastructure solutions.

Overview

DOE boasts a system of 17 National Laboratories that have served as the Nation's leading institutions for scientific innovation for more than 75 years. These institutions continue to work toward groundbreaking discoveries to advance the Department's science and technology agenda, including the operation of national scientific user facilities used by over 40,000 researchers from academia, government, and industry. The National Laboratories are a system of intellectual assets unique among world scientific institutions and serve as regional engines of economic growth for states and communities across the country.

DOE Organization

In response to changing needs and an extended energy crisis, Congress passed the Department of Energy Organization Act in 1977, creating one of the most diverse agencies in the Federal Government. The legislation brought together for the first time, not only most of the Government's energy programs, but also science and technology programs and defense responsibilities that included the design, construction, and testing of nuclear weapons. The Department provided the framework for a comprehensive and balanced national energy plan by coordinating and administering the energy functions of the Federal Government. The Department undertook responsibility for long-term, high-risk research and development (R&D) of energy technology, federal power marketing, some energy conservation activities, the nuclear weapons programs, some energy regulatory programs, and a central energy data collection and analysis program.

The Department's organizational chart is located at http://energy.gov/about-us/organization-chart.

Strategic Framework

The FY 2024 Annual Performance Report is a retrospective description of activities in pursuit of outcomes articulated by strategic goals. The Department's performance report compares actual performance achieved against planned performance of objectives and performance goals in the agency's performance plan.

FY 24 APR Strategic Framework	
Goal	**Strategic Objective**
Goal 1: Drive U.S. Energy Innovation and Deployment on a Path to Net-Zero Emissions by 2050	1 - Drive innovation of cost-efficient and affordable clean technologies and solutions through Research, Development, Demonstration and Deployment (RDD&D)
	2 - Accelerate deployment of clean technologies at scale and pace
	3 - Engage internationally to achieve global decarbonization and energy security while expanding markets for U.S. clean energy goods and services
	4 - Catalyze clean energy solutions for job creation and economic growth, including with a robust place-based focus
Goal 2: Strengthen the Nation's Energy Security, Resiliency, Affordability, and Reliability	5 - Develop and deploy innovative solutions to harden energy infrastructure against physical threats including climate change
	6 - Advance adoption of solutions to prevent and respond to cyber vulnerabilities and incidents
	7 - Secure the Supply Chain for a Robust Clean Energy Transition

	8 - Support an effective emergency response capability in the federal government for responding to critical energy events
	9 - Implement consolidated interim storage for the Nation's spent nuclear fuel
Goal 3: Advance Science Discovery and National Laboratory Innovation	10 - Advance basic scientific understanding and identify new methods and tools to further discovery
	11 - Lead globally in key innovation and national security areas including clean energy technologies artificial intelligence, quantum information sciences, microelectronics, advanced computing, particle accelerator technologies, and next generation biology and biosecurity
	12 - Commercialize innovations to improve the lives of Americans and the world
Goal 4: Ensure America's Nuclear Security by Harnessing Unparalleled Science and Technology Capabilities	13 - Design, deliver, and maintain a safe, secure, reliable, and effective nuclear stockpile in support of the Nation's integrated deterrent
	14 - Forge solutions that enable global security and stability
	15 - Harness the atom to safely, reliably, and affordably power a global fleet that enables unrivaled responsiveness, endurance, stealth, and warfighting capability
Goal 5: Promote Equity and Energy Justice	16 - Advance equity in DOE's procurement, funding, R&D and D&D processes and activities
	17 - Increase access to affordable, sustainable, and reliable energy for disadvantaged communities
	18 - Ensure 40 percent of the overall benefits of relevant federal investments are delivered to disadvantaged communities
	19 - Support economic development, including through clean economy opportunities for workers in communities and industries in transition, like former coal and power plant communities

	20 - Enhance engagement and energy economic development opportunities in Tribal communities
	21 - Support diversity and equity among researchers, projects, entrepreneurs, and the National Laboratories
Goal 6: Advance Clean-Up of Radioactive and Chemical Waste	22 - Support environmental remediation
Goal 7: Operational Excellence	23 - Attract, manage, train, and retain the best federal workforce to meet future mission needs
	24 - Use taxpayer funds efficiently and improve visibility into how funds are being used
	25 - Monitor departmental performance to ensure that program activities are executed in a safe and secure manner consistent with Departmental direction

Agency Priority Goals

FY 2024-2025	
Goal	**Agency Priority Goals**
Goal 1: Energy Sector Cybersecurity	**Goal statements** By September 30, 2024, increase by one (~20%) the 2023 baseline number of sources (six) contributing bills of materials (BOMs) to the Energy Cyber Sense data repository (contingent upon operationalizing one new readable BOM format) and conduct 10 stakeholder energy supply chain cybersecurity outreach and education activities, including (but not limited to), conference presentations, technical whitepapers and analytical reports– culminating in a strategic plan for maturing BOMs in the energy sector. **Problem to Be Solved** Energy Sector Cybersecurity. Increase the cyber resilience of the grid by addressing critical vulnerabilities prior to adversary exploitation through a multi-faceted approach that includes applying classified threat intelligence, illuminating systemic cyber supply chain risks, cyber vulnerability testing and forensic analyses, and engineering out cyber risks – all in close partnership with asset owners and manufacturers across the Energy Sector.

Goal 2: Clean Energy Innovation and Deployment	**Goal statements** Support integrated research, development, demonstration and deployment of cost-competitive, clean energy technologies to achieve net zero goals while promoting good paying clean energy jobs, domestic manufacturing, resilient supply chains, and benefits to disadvantaged communities. U.S. clean energy activities in key technology areas will have strategies with innovation and deployment targets that would advance progress on achieving emissions reductions of 50 percent by 2030 compared to 2005 levels and net zero emissions by 2050. **Problem to Be Solved** The Administration's ambitious economic, job and climate goals require accelerating progress through fully integrated science and energy applied energy research, development, demonstration and deployment. The Department will increase effectiveness and efficiency through strategic execution of resources focused on achieving the Nation's most critical energy and climate challenges. **What Success Looks Like** Investing DOE resources according to strategies for key crosscutting technology areas identified as critical to achieving our climate and energy goals inform funding opportunities and the activities of performers from national labs, industry and academia.

Goal 3: Equity and Justice	**Goal Statements** By September 30, 2025, the Office of Civil Rights and Equal Employment Opportunity (OCR-EEO), External Civil Rights Compliance and Enforcement Division (ECRD) will have a comprehensive civil rights strategic enforcement plan in place to embed civil rights in the award and execution of federally funded programs. By the end of September 30, 2025, the External Civil Rights Compliance and Enforcement Division (ECRD) will have relaunched the Department's Limited English Proficiency (LEP) program, and 90% of Departmental Elements will have an LEP plan in place. **Problem to Be Solved** Historically, OCR-EEO has not had the resources to establish a robust external civil rights compliance and enforcement program related to recipients of DOE Federal financial assistance (FFA). However, the numbers and types of programs funded by the Department have expanded greatly. In addition, recent increases in DOE funding levels (attributed to the Bipartisan Infrastructure Law and other appropriations bills) underscore the need to implement a robust external civil rights program to: (1) better inform Departmental Elements about the responsibilities of their recipients of financial assistant; (2) ensure FFA recipients are complying with civil rights laws; and (3) implement a Language Assistance Plan to ensure LEP populations have meaningful access to DOE conducted programs and activities. **What Success Looks Like** A comprehensive civil rights compliance and enforcement strategy related to DOE financial assistance and the mechanisms to fully implement it will be institutionalized within the Department. Department offices involved in awarding financial assistance will collaborate with CRD to embed civil rights considerations in the award process and in the execution of federally funded programs. Additionally, 90% of Departmental Elements will have an LEP plan in place that is regularly updated to ensure meaningful access by LEP individuals to DOE conducted programs and activities.

Goal 4: Environmental Management	**Goal Statements** By August 2025, complete Hot Commissioning of the Direct Feed Low Activity Waste System (DFLAW) which enables stabilization of treated waste in glass. Tank waste treatment at Hanford is an EM priority. Dewatering and grouting of the K-West 105 Area Spent Fuel Basin are necessary activities that proceed the deactivation and demolition of the Spent Fuel Basin and placement of the K-West reactor in interim safe storage. Savannah River Site The Salt Waste Processing Facility (SWPF) is a first-of-a-kind nuclear facility that became operational in October 2020. The SWPF separates highly radioactive waste from less-radioactive salt solution. Upon separation, concentrated high-activity waste is taken to the Defense Waste Processing Facility (DWPF) where it is converted into a solid glass form for eventual off-site disposal; and decontaminated salt solution is taken to the Saltstone Production Facility where it is mixed with cement-like grout for onsite disposal in Saltstone Disposal Units (SDUs). Oak Ridge The completion of soil remediation field work at the Oak Ridge East Tennessee Technology Park (ETTP) is a necessary activity that proceeds the transfer of economically viable parcels of land to the community for reuse, the areas to the Tennessee Wildlife Resources Agency, and the transition of remaining portions of ETTP to long-term stewardship. Idaho The Integrated Waste Treatment Unit (IWTU) is key to addressing the remaining tank waste at Idaho. The cumulative treatment of approximately 200,000 gallons of radioactive sodium bearing tank waste places Idaho on track to complete sodium bearing waste processing by 2029.

	Portsmouth The Depleted Uranium Hexafluoride (DUF6) Conversion Project provides for the operation of facilities to convert stored DUF6 into depleted uranium oxide, a more stable chemical form that can be reused, stored, or disposed. Portsmouth's outyear target is to cumulatively convert approximately 44,000/50,000 metric tons of DUF6 by end-FY 2024/2025. Los Alamos Reduction of the waste footprint and annual regulatory drivers can be met by completing 65 shipments of transuranic waste to the Waste Isolation Pilot Plant (WIPP). West Valley Demolition of the 50-year-old Main Plant Process Building (MPPB) started on September 21, 2022. The demolition of the above grade portion of MPPB and off-site shipment and disposal of debris are critical path activities in accordance with the requirements of the 1980 West Valley Demonstration Project Act. Moab Excavation and transportation of the 16 million ton uranium mill tailings pile, contaminated sub-pile and off-pile, and other contaminated materials from the Moab site, 30 miles north to the Crescent Junction disposal cell for permanent disposition, is the cleanup goal at Moab.

Goal 5: National EV Charging Network	**Goal statement** Deploy Electric Vehicle Charging Infrastructure Under the Infrastructure Investment and Jobs Act towards a National Network of at least 500,000 EV Chargers by 2030 so that everyone can ride and drive electric. The Joint Office of Energy and Transportation, in conjunction with DOT and DOE, will support the increased deployment of publicly available EV charging ports to 310,000 by the end of calendar year 2025. **Problem to Be Solved** o The Infrastructure Investment and Jobs Act (IIJA) and Inflation Reduction Act (IRA) make the most transformative investment in EV charging in United States history accompanied by an unprecedented level of private sector investment into electric vehicles and charging infrastructure. Taken together, these present a generational opportunity and imperative to help tackle the climate crisis, create good-paying union jobs to build the clean energy economy, and facilitate American innovation and energy independence. **What Success Looks Like** A nationwide network of at least 500,000 EV chargers by 2030 that ensures a convenient, reliable, affordable, and equitable charging experience for all users.

Goal 6: National Laboratories	**Goal statement** Deliver the highest quality R&D and production capabilities; strengthen partnerships with industry, academia, and other key regional and national stakeholders; and revitalize and modernize the physical infrastructure of the national laboratories to enable efficient national leadership in science, technology, economic competitiveness, and national security. **Problem to Be Solved** The National Labs will continue to prioritize world leading and mission-critical innovation in science, engineering, and technologies. **What Success Looks Like** The National Labs will work collaboratively to use cross-laboratory models in order to extend the capabilities and utility of high-resolution climate predictions to underpin solutions that address the Nation's energy security and environmental equity challenges, including those that are faced by America's diverse and disadvantaged communities. Building on the Integrated Research Infrastructure (IRI) report published in 2023, the National Laboratories will work collaboratively with the Office of Science to establish the IRI program governance and steering model and membership to accelerate progress towards high priority integrated science goals. The National Laboratories will work collaboratively to establish a common authentication/authorization security framework and will demonstrate a workflow utilizing the security framework across at least three National Laboratories.

Goal 7: Nuclear Security	**Goal statement** Modernize the U.S. nuclear weapons stockpile as directed by the Nuclear Posture Review and strengthen nuclear nonproliferation and arms control. By September 30, 2025, complete 100 percent of B61-12 gravity bomb deliveries required to support fiscal years 2024 and 2025 U.S. Air Force operational needs. By September 30, 2025, complete 100 percent of W88 Alteration 370 warhead deliveries required to support fiscal years 2024 and 2025 U.S. Navy operational needs. By September 30, 2025, replace 56 additional cesium-137-based blood irradiators with non-radioactive source-based technologies. **Problem to Be Solved** Sustain steady state production for the B61-12 and the W88 Alteration 370. Achieve and sustain steady state replacement of cesium-137-based blood irradiators with more secure non-radioactive-source-based technologies, such as x-ray. **What Success Looks Like** Delivery schedules for the B61-12 and the W88 Alteration 370 are met. Replacement targets for cesium-137-based blood irradiator replacements are met.

Goal 1: Drive U.S. Energy Innovation and Deployment on a Path to Net-Zero Emissions by 2050

Strategic Objective 1 – Drive innovation of cost-efficient and affordable clean technologies and solutions through Research, Development, Demonstration and Deployment (RDD&D).

Strategic Goal Measure: Develop electrolysis technology to produce near-zero GHG hydrogen at $2/kg H2 by 2026 and $1/kg by 2031.

- OCED has issued Phase 1 awards for 4 hydrogen hubs and is in negotiations with the remaining 3 that will significantly expand the hydrogen industry, providing a clear path to market for emerging electrolysis technologies.

Strategic Goal Measure: Accelerate innovation and adoption of advanced electric delivery hardware and components technologies, including energy storage, power-flow control devices; high-power delivery systems to transmit over long distances; advanced sensors; and advanced protection systems.

- A team of researchers demonstrated that tight integration of artificial intelligence, cloud-based high-performance computing, and human subject matter expertise can dramatically reduce the time required to identify, synthesize, and test new battery materials. The team from Pacific Northwest National Laboratory and Microsoft successfully winnowed an initial list of 32 million candidate systems to 23 within 80 hours, with the entire process – from millions of candidates to prototype battery – being completed in 9 months. The new solid-state lithium-sodium electrolyte developed through this partnership has the potential to enhance safety relative to current battery technology and reduce the amount of lithium required.

Strategic Goal Measure: Develop technologies and engineering tools to support real-time power sector operations, planning, and training, to meet evolving transmission and distribution system needs.

- OE funded development of the Automated Instrumentation and Measurement Sensor & Systems (AIMS) platform (i.e., autonomous, sensor-ladened drones) that can enhance real-time, situational awareness of transmission and distribution asset conditions for improved operational reliability and resilience.

Strategic Goal Measure: Accelerate innovation and adoption of advanced electric delivery hardware and components technologies, including energy storage, power-flow control devices; high-power delivery systems to transmit over long distances; advanced sensors; and advanced protection systems.

- OE funded development of the Reconductoring Economic & Financial Analysis (REFA) tool to help transmission planners and other decision makers better understand the financial, environmental, and economic benefits of reconductoring upgrades.

Strategic Goal Measure: Drive the reduction of the average levelized cost [1] of utility-scale solar photovoltaic generation in the U.S. to 3 cents/kWh utility scale solar.

- 3.9 cents/kWh- Lagging. The price of components in the United States is twice the global price. SETO will continue and explore more funding programs to support domestic component manufacturing of products at competitive prices. SETO will continue its work on reducing the soft costs in utility scale systems, such a siting and interconnection.

Strategic Goal Measure: Enable deployment of geothermal district heating and cooling systems to at least a dozen communities by 2026 through successful technology demonstrations in diverse geographies and community types.

- Negotiations of 2 awards were completed for the BIL EGS Pilot Demonstration FOA. A third award is currently in negotiations.

Strategic Goal Measure: Develop electrolysis technology to produce near-zero GHG hydrogen at $2/kg H2 by 2026 and $1/kg by 2031.

- Of the 52 selections announced under the “Bipartisan Infrastructure Law: Clean Hydrogen Electrolysis, Manufacturing, and Recycling” FOA, 41 full awards were made by 9/30/2024, exceeding the 50% target with 78% of selections awarded.

Strategic Goal Measure: Demonstrate a $60/kwh battery cell cost that is also low in critical minerals, 90% recyclable and capable of 15 min charge by 2028.

- Target battery cost reduction was met during FY24. The current cost estimate is $110 per kilowatt-hour of rated energy. The cost is based on a production volume of 100,000 battery packs per year for batteries that are projected to meet DOE performance targets, including the 1,000-cycle life requirement.

Vehicle Technologies

Program	Vehicle Technologies				
Performance Goal (Measure)	**Batteries** - Reduce the cost of batteries for Electric Vehicles (EVs).				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	$ 175 /kWh	$ 140 /kWh	$ 130 /kWh	$ 118 /kWh	$ 111 /kWh
Result	**Exceeded** - 169	**Exceeded** - 133	**Exceeded** - 129.8	**Exceeded** - 118	**Exceeded** - 110
Endpoint Target	$130/kWh by 2022 (battery pack level) $100/kWh by 2028 (battery pack level) $60/kWh long term (battery cell level)				
Commentary on 2024 Results (Action Plan if Not Met)	Target battery cost reduction was met during FY24. The current cost estimate is $110 per kilowatt-hour of rated energy. The cost is based on a production volume of 100,000 battery packs per year for batteries that are projected to meet DOE performance targets, including the 1,000-cycle life requirement.				
Documentation, Limitations, Methodology, Validation, and Verification	Achieving the endpoint target will enable cost competitive market entry of EVs by reducing the cost of electric vehicle batteries by approximately 70 percent (roughly $14,000) from FY 2012. Battery cost projections are derived by battery manufacturers using USABC's battery manufacturing cost model for specific battery cell and module designs that meet DOE/USABC system performance targets and are based on a production volume of at least 100,000 batteries per year.				

Program	Vehicle Technologies				
Performance Goal (Measure)	**Electric Drive Systems** - Reduce the costs of electric drive systems.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	$ 8 /kWh	$ 8 /kWh w/o Rare Earth Magnets	$ 7 /kWh w/Rare Earth Magnets	$ 7 /kWh w/o Rare Earth Magnets	$ 7 /kWh
Result	**Met** - 8	**Met** - 8	**Met** - 7	**Met** - 7	**Exceeded** - 6.5
Endpoint Target	$7/kW by 2022				
Commentary on 2024 Results (Action Plan if Not Met)	Target Electric Drive system cost target of $7/kW was met during FY 24. The current cost estimate is < $6.5/kW for >12 kW/L system. The cost is based on a production volume of >100k units/year.				

Documentation, Limitations, Methodology, Validation, and Verification	2012 Baseline: $30/kWh Reducing the cost of electric traction drive systems that can deliver at least 55kW of peak power will enable cost competitive technologies for market entry and vehicle electrification. High volume (>100K units/year) modeled costs are based on results from advanced inverter and motor technology developments that are combined into a functional system or system model for evaluation. Includes technologies that significantly reduce or eliminate dependence on critical materials (such as cobalt and heavy rare earth magnet materials) and utilize recycled material feedstocks. *Starting In 2021, alternating annual targets aim to reduce Electric Drive systems costs without using heavy rare-earth magnet materials.

Solar Energy

Program	Solar Energy				
Performance Goal (Measure)	**Grid** - Reduce the modeled system cost of solar + storage.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	$ 1.6 /WDC	$ 1.6 /WDC	$ 1.55 /WDC	$ 1.53 /WDC	$ 1.52 /WDC
Result	**Not Met** - 1.73	**Not Met** - 1.66	**Not Met** - 1.7	**Met** - 1.53	**Met** - 1.45
Endpoint Target	$1.36/WDC by 2025				
Documentation, Limitations, Methodology, Validation, and Verification	The solar and energy storage cost target is an unsubsidized cost of energy at utility scale PV array with 4 hours of battery storage. Model assumptions based on NREL analysis: 2017 NREL PV Benchmark Report, the Annual Technology Baseline and PV plus storage analysis.				

Program	Solar Energy				
Performance Goal (Measure)	**Photovoltaic (PV)** - Reduce the modeled Levelized Cost of Energy (LCOE) Solar PV energy.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	4.3 cents/kWh	4.3 cents/kWh	4 cents/kWh	3.8 cents/kWh	3.6 cents/kWh
Result	**Not Met** - 4.6	**Exceeded** - 4.1	**Not Met** - 4.1	**Met** - 3.8	**Not Met** - 3.9
Endpoint Target	3 cents /kWh by 2025 (without subsidies), 2 cents/kWh by 2030				

Commentary on 2024 Results (Action Plan if Not Met)	Lagging. The price of components in the United States is twice the global price. **Action Plan:** SETO will continue and explore more funding programs to support domestic component manufacturing of products at competitive prices. SETO will continue its work on reducing the soft costs in utility scale systems, such a siting and interconnection.
Documentation, Limitations, Methodology, Validation, and Verification	The PV solar energy cost target is an unsubsidized levelized cost of energy for a representative utility-scale PV system at a location in the contiguous United States having average solar insolation. It is calculated by entering capital and operating costs from the annual U.S. Solar PV System and Energy Storage Cost Benchmark report into NREL's System Advisor Model (SAM).

Program	Solar Energy				
Performance Goal (Measure)	**Concentrated Solar Power (CSP)** - Reduce the modeled levelized cost of CSP energy.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	9 cents/kWh	9 cents/kWh	8.5 cents/kWh	8 cents/kWh	7.5 cents/kWh
Result	**Not Met** - 9.8	**Not Met** - 9.1	**Not Met** - 9.5	**Met** - 8	**Not Met** - 8.7
Endpoint Target	8 cents/kWh by 2022 5 cents/kWh by 2030				
Commentary on 2024 Results (Action Plan if Not Met)	Lagging slightly **Action Plan:** SETO will continue to work on all is research and development focused on reducing hardware and soft costs for CSP.				
Documentation, Limitations, Methodology, Validation, and Verification	Based on the technical report, “Concentrating Solar Power Best Practices Study" a CSP plant in a Class 3 resource area achieved an unsubsidized LCOE of 9.1 cents/kWh in 2021. Unsubsidized cost of energy at utility scale including 14 hours of thermal storage, in the U.S. southwest. Results will be published in periodic NREL technical reports.				

Wind Energy

Program	Wind Energy				
Performance Goal (Measure)	**Offshore** - Reduce the modeled Levelized Cost of Energy (LCOE) from offshore wind energy.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**

Target	8.6 cents/kWh	8 cents/kWh	7.5 cents/kWh	7 cents/kWh	≤ 12 cents/kWh
Result	**Exceeded** - 8.3	**Exceeded** - 7.6	**Met** - 7.5	**Met** - 7	**Met** - 12
Endpoint Target	5.1 cents/kWh by 2030 (unsubsidized)				
Commentary on 2024 Results (Action Plan if Not Met)	WETO reviewed NREL's draft Cost of Wind Energy Review that provided a preliminary fixed-bottom OSW LCOE value of lower than 12 cents/kWh in 2024 using 2023 data (shown in 2022 dollars).				
Documentation, Limitations, Methodology, Validation, and Verification	Offshore Wind Fixed-bottom LCOE is based off a U.S. reference wind farm with a wind speed of 9.17m/s @ 100m; 25-year plant life; financing rates will be derived from Annual Technology Baseline analysis. CapEx, OpEx, and turbine characteristics updated annually based on learning rates and data collected by NREL. All documentation for this LCOE analysis is available in the Cost of Wind Energy Review published by NREL at the end of each calendar year. All values are shown in 2022-dollar terms. Fiscal year targets are based on prior calendar year-end commercial operation date values. All documentation for WETO LCOE values is updated annually in NREL's publication of the Cost of Wind Energy Review. The 2022 Cost of Wind Energy Review can be found here: https://www.nrel.gov/docs/fy24osti/88335.pdf. In FY2024 WETO re-baselined goals in 2022-dollar figures.				

Water Power

Program	Water Power				
Performance Goal (Measure)	**Dams** - Reduce the modeled Levelized Cost of Energy (LCOE) from hydropower from non-powered dams.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	9.2 cents/kWh	9.1 cents/kWh	9 cents/kWh	8.8 cents/kWh	≤ 8.6 cents/kWh
Result	**Met** - 9.2	**Met** - 9.1	**Met** - 9	**Met** - 8.8	**Met** - 8.6
Endpoint Target	9.2 cents/kWh by 2020 9.0 cents/kWh by 2022 7.5 cents/kWh by 2030				
Commentary on 2024 Results (Action Plan if Not Met)	A recent nation-wide NPD cost assessment identified 14 sites with LCOE estimates less than 9 cents/kWh.				
Documentation, Limitations, Methodology, Validation, and Verification	The hydropower from non-powered dams energy cost target is an unsubsidized cost of energy at utility scale. All terms and methodologies listed in the Hydropower Vision Report (https://energy.gov/eere/water/articles/hydropower-vision-new-chapter-america-s-1st-renewable-electricity-source). FY24 cost target and 2040 goal set based on ORNL's 2020 Cost Analysis of Hydropower Options at Non-Powered Dams (https://info.ornl.gov/sites/publications/Files/Pub145012.pdf). Baseline cost is representative of LCOE estimates for sites accounting for one-third of the cumulative capacity of the 3,000+ most competitive dams evaluated.				

Program	Water Power				
Performance Goal (Measure)	**Streams** - Reduce the modeled Levelized Cost of Energy (LCOE) from new stream developments.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	10.9 cents/kWh	10.7 cents/kWh	10.5 cents/kWh	10.3 cents/kWh	≤ 10.1 cents/kWh
Result	**Met** - 10.9	**Met** - 10.7	TBD	**Not Met** - 10.3	**Met** - 10.1
Endpoint Target	8.9 cents/kWh by 2030				
Commentary on 2024 Results (Action Plan if Not Met)	WPTO released several initiatives including the Hydropower Testing Network, Small Hydropower Pipeline Program, and the Hydro-TCP, which aim to reduce costs and risk for NSD projects.				
Documentation, Limitations, Methodology, Validation, and Verification	The new stream developments energy cost target is an unsubsidized cost of energy at utility scale. Target is for small, low-head developments. Although the baseline for the hydropower LCOE estimate is derived from empirical data, the sample set of new hydropower builds, on an annual basis, is too small to establish an empirically based national average annually. The goals and trajectories are based on expert opinion as published in the Hydropower Vision Report and reflect cost reductions in capital expenditures. (https://energy.gov/eere/water/articles/hydropower-vision-new-chapter-america-s-1st-renewable-electricity-source). New analysis and report expected in FY23 to support cost targets.				

Program	Water Power				
Performance Goal (Measure)	**Marine & Hydrokinetic (MHK)** - Reduce the modeled Levelized Cost of Energy (LCOE) from Marine & Hydrokinetic technologies.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	55 cents/kWh	54 cents/kWh	51 cents/kWh	49 cents/kWh	≤ 43 cents/kWh
Result	**Met** - 55	**Met** - 54	**Data Not Available**	**Not Met** - 49	**Not Met**
Endpoint Target	27 cents/kWh by 2030				
Commentary on 2024 Results (Action Plan if Not Met)	Due to delays in planned deployments, as well as need to complete decommissioning activities for recent deployments, detailed power production from deployments to determine LCOE is not yet available for analysis. **Action Plan:** WPTO is gathering detailed power production data from deployments for LCOE analysis to comparison and will publish once complete.				

Documentation, Limitations, Methodology, Validation, and Verification	The goals and trajectories are based on expert opinion as published in the Hydropower Vision Report and reflect cost reductions in Capital Expenditures. https://energy.gov/eere/water/articles/hydropower-vision-new-chapter-america-s-1st-renewable-electricity-source.

Wind Energy

Program	Wind Energy				
Performance Goal (Measure)	**Offshore** - Reduce the modeled Levelized Cost of Energy (LCOE) from offshore wind energy.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	8.6 cents/kWh	8 cents/kWh	7.5 cents/kWh	7 cents/kWh	≤ 12 cents/kWh
Result	**Exceeded** - 8.3	**Exceeded** - 7.6	**Met** - 7.5	**Met** - 7	**Met** - 12
Endpoint Target	5.1 cents/kWh by 2030 (unsubsidized)				
Commentary on 2024 Results (Action Plan if Not Met)	WETO reviewed NREL's draft Cost of Wind Energy Review that provided a preliminary fixed-bottom OSW LCOE value of lower than 12 cents/kWh in 2024 using 2023 data (shown in 2022 dollars).				
Documentation, Limitations, Methodology, Validation, and Verification	Offshore Wind Fixed-bottom LCOE is based off a U.S. reference wind farm with a wind speed of 9.17m/s @ 100m; 25-year plant life; financing rates will be derived from Annual Technology Baseline analysis. CapEx, OpEx, and turbine characteristics updated annually based on learning rates and data collected by NREL. All documentation for this LCOE analysis is available in the Cost of Wind Energy Review published by NREL at the end of each calendar year. All values are shown in 2022-dollar terms. Fiscal year targets are based on prior calendar year-end commercial operation date values. All documentation for WETO LCOE values is updated annually in NREL's publication of the Cost of Wind Energy Review. The 2022 Cost of Wind Energy Review can be found here: https://www.nrel.gov/docs/fy24osti/88335.pdf. In FY2024 WETO re-baselined goals in 2022-dollar figures.				

Program	Wind Energy				
Performance Goal (Measure)	**Onshore** - Reduce the modeled Levelized Cost of Energy (LCOE) from land-based wind energy.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	3.9 cents/kWh	3.3 cents/kWh	3 cents/kWh	2.9 cents/kWh	≤ 4 cents/kWh
Result	**Exceeded** - 3.4	**Exceeded** - 3.1	**Met** - 3	**Met** - 2.9	**Met** - 4
Endpoint Target	2.3 cents/kWh by 2030				

Commentary on 2024 Results (Action Plan if Not Met)	WETO reviewed NREL's draft Cost of Wind Energy Review that provided a preliminary LBW LCOE value of 4 cents/kWh in 2024 using 2023 data (shown in 2022 dollars).
Documentation, Limitations, Methodology, Validation, and Verification	Land based wind LCOE is based off a U.S. reference wind farm using the following assumptions: 7.25 m/s Wind speed @ 50m hub height; 25-year plant life; financing rates will be derived from Annual Technology Baseline analysis (ATB). CapEx, OpEx, and turbine characteristics are updated based on annual ATB analysis. The FY 2023 baseline assumes a representative 3.3 MW–148 m rotor diameter–100 m hub height wind turbine and the FY 2035 target assumes a 6 MW–170 m rotor diameter –115 m hub height wind turbine. All documentation for this LCOE analysis is available in the Cost of Wind Energy Review published by NREL at the end of each calendar year. All values are shown in 2022-dollar terms. Fiscal year targets are based on prior calendar year-end commercial operation date values. All documentation for WETO LCOE values is updated annually in NREL's publication of the Cost of Wind Energy Review. The 2022 Cost of Wind Energy Review can be found here: https://www.nrel.gov/docs/fy24osti/88335.pdf.

Geothermal Technology

Program	Geothermal Technology				
Performance Goal (Measure)	**Systems** - Reduce the modeled Levelized Cost of Energy (LCOE) from newly developed geothermal systems.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	21.4 cents/kWh	21.1 cents/kWh	20.8 cents/kWh	20.5 cents/kWh	20.2 cents/kWh
Result	**Met** - 21.4	**Met** - 21.1	TBD	**Met** - 20.5	**Met** - 20.2
Endpoint Target	16 cents/kWh by 2030; 6 cents/kWh by 2050 (revised from 2030)				
Commentary on 2024 Results (Action Plan if Not Met)	The success from the Q1 milestone resulted in a reduction in wellfield maintenance cost to account for the improved well cement formulations that were tested for high temperature applications. The Q2 milestone resulted in both an improvement in drilling and stimulation success rate to account for the improvement of the conceptual reservoir model. The success from the Q4 milestone results in an overall decrease in the drilling costs due to the performance improvements of new drilling technologies.				

Documentation, Limitations, Methodology, Validation, and Verification	The geothermal energy cost target is an unsubsidized cost of energy at utility scale. The Geothermal Electricity Technology Evaluation Model (GETEM) estimates the representative costs of generating electrical power from geothermal energy. The estimated costs are dependent upon several factors specific to the scenario being evaluated, with most of these factors defined by inputs provided. Based on the scenario characterization, cost estimates are developed for all aspects of a project needed to provide the specified or calculated power sales. These costs and annual power sales are the basis for determining a levelized cost of electricity (LCOE). The GETEM user manual is published on the Idaho National Lab Website here: https://workingincaes.inl.gov/SiteAssets/CAES%20Files/FORGE/inl_ext-16-38751%20GETEM%20User%20Manual%20Final.pdf 2013+: includes both hydrothermal and Enhanced Geothermal Systems (EGS).

Resilient Distribution Systems

Program	Resilient Distribution Systems				
Performance Goal (Measure)	**Resilient Distribution Systems** - Develop and validate the technical feasibility of integrated distribution control architectures to effectively provide resilient grid services from all types of distribution assets.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	Demonstrate representative distribution feeder with at least 50% of its control optimizations originating at or below the substation, utilizing distributed energy resource-derived control services in simulation	Develop and complete simulation testing of integrated software capabilities of resilient distribution design and restoration control on a distribution utility feeder circuit with at least 500 nodes and quantify the resilience value under extreme weather and cyber-physical events.	Develop, test, and validate the Resilient Operations of Networked Microgrids (RONM) modeling capabilities to reduce system recovery times after extreme event induced outages, ready for use by the Nation's distribution utilities.	Complete the design and prototyping of three virtual Microgrid Building Blocks (MBBs) for control, communications, and integration, respectively, while meeting the MBB design goal of reducing microgrid capital costs by 15% and project time by 20%.	Develop operational use cases for MBB and conduct functional testing of modularization and standardization of the MBB prototypes on the developed use cases to validate performance in meeting the design goals.
Result	**Met**	**Met**	**Met**	**Met**	**Not Met**
Endpoint Target	Achievement of a resilient distribution system, with integration of networked microgrids and transactive control signals operating in coordination with the Advanced Distribution Management System, that allows for integration of all types of energy resources by the end of FY 2030.				
Commentary on 2024 Results (Action Plan if Not Met)	The Final Target is expected to be met on April 30, 2025, with completion of CHIL and PHIL validation testing on 3/31/2025 and delivery of the validation report by 4/30/2025. The delay in finalizing the key subcontract for the integrated MBB prototype for testing caused the schedule slip. **Action Plan:** The CHIL validation testing is expected to be completed by 10/31/2024. Development of PHIL test setup is expected to be done by 12/15/2024, followed by completion of PHIL validation testing by 3/31/2025. The final validation report is expected to be delivered on 4/30/2025.				

Documentation, Limitations, Methodology, Validation, and Verification	The MBB project summary and the MBB Peer Review presentation submitted for the 2024 Program Peer Review meeting (held on October 1-2, 2024).

Energy Storage

Program	Energy Storage				
Performance Goal (Measure)	**Energy Storage** - Accelerate development of bi-directional grid scale (>1 MW) energy storage technologies to lower costs and increase capabilities to accelerate adoption of these technologies as a key component of the future-ready grid.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	Evaluate improvements to novel aqueous soluble organic flow battery on a prototype scale stack capable of meeting $250/kWh cost target for a projected 1MW/4MWh system operating at a 50% increase in current density, 150mA/cm².	Demonstrate a kW-scale prototype stack of aqueous soluble organic flow battery technology operating at a current density of 225 mA/cm², a 50% improvement over the FY 2020 target, and capable of meeting a $200/kWh cost target for a projected 1MW/4MWh system.	Demonstrate enhanced novel aqueous soluble organic flow battery technologies capable of achieving over 500 continuous cycles with greater than 90% capacity retention with a projected system cost of less than $175 per kWh at scale.	Demonstrate novel sodium-ion battery pouch cell with at least 50 mAhr capacity capable of achieving $100/kWh materials cost at an energy retention > 80% over 250 cycles.	Demonstrate a novel sodium-ion battery pouch cell with at least 50 mAhr capacity capable of achieving a $95/kWh materials cost at an energy retention > 80% over 400 cycles.
Result	**Met**	**Met**	**Met**	**Met**	**Met**
Endpoint Target	By 2030 deliver a suite of storage technologies at less than $50/kWh that enable reliable, resilient, secure, and affordable electricity for consumers and utilities.				
Commentary on 2024 Results (Action Plan if Not Met)	The Energy Storage Program, overall, supports technical R&D advancement of energy storage materials, designs, and deployment opportunities. This milestone addressed specific performance and cost targets for Na-Ion batteries that were achieved through innovations yielding new materials assembled to produce a lower-cost battery system. To further lower the material cost and to improve the cycle life, further investigation into new cathode material, the material morphology, and highly stable safe electrolytes may continue as follow-on activities that could further advance the Na-Ion battery options available to meet consumer needs.				

Documentation, Limitations, Methodology, Validation, and Verification	We currently measure this program based on research outputs and the mechanisms by which they are exposed to industry and other stakeholders. Project reports (including quarterly technical reports), whitepapers, presentations, and peer-reviewed publications also support validation of the measure. In addition, program management and research staff participate in industry engagements. In FY 2024, these engagements included conferences, webinars, and discussions with industry stakeholders, including through the annual OE Energy Storage Program Peer Review and the Energy Storage Grand Challenge annual summit. In parallel with the work to meet this milestone, a Na-Ion Consortium was stood up to bridge experts across the DOE labs and relevant experts in academia, providing an additional mechanism for validation of the results.

FECM - Office of Carbon Management

Program	FECM - Office of Carbon Management				
Performance Goal (Measure)	**Hydrogen Production** - Develop innovations that can reduce the capital and operating costs of carbon neutral hydrogen production from biomass and post-consumer waste feedstocks that require less tipping fee to reach production cost of $1.00 per kilogram of hydrogen				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	N/A	Initiate at least two cost-shared R&D projects that mature innovations to enable flexibility in modular gasifier technology to allow for blended feedstock operation of biomass mixed with variable loadings of legacy waste coal, waste plastics, municipal solid waste (MSW) and/or other wastes to produce carbon neutral hydrogen which can be purified to 99% with currently available state of the art technology.	Validate feasibility of flexible/ blended feedstock (legacy coal waste, biomass, MSW and/or unrecyclable plastics) operation on a lab scale gasifier to produce hydrogen rich syngas.
Result	N/A	N/A	N/A	**Met**	**Met**
Endpoint Target	By the end of FY 2030, complete design, construction, and testing of advanced modular gasification systems of co-gasification of waste coal, biomass, and plastics to produce clean hydrogen at $1/kg with net-zero carbon emissions.				
Commentary on 2024 Results (Action Plan if Not Met)	Successfully validated the feasibility of flexible/blended feedstock operation on a lab scale gasifier to produce hydrogen rich syngas.				
Documentation, Limitations, Methodology, Validation, and Verification	https://www.netl.doe.gov/node/14209 https://netl.doe.gov/carbon-management/gasification/process-intensification-for-syngas				

Program	FECM - Office of Carbon Management				
Performance Goal (Measure)	**Cost of Carbon Dioxide Removal (CDR)** - Develop cost-effective, efficient, and reliable CDR technologies that are focused on achieving the Carbon Negative Shot Goal of $100/ton				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	N/A	Complete two feasibility studies for locating direct air capture (DAC) systems at specific locations in the U.S..	Develop Monitoring, Reporting, and Verification methodology and field test CDR R&D projects
Result	N/A	N/A	N/A	**Met**	**Not Met**
Endpoint Target	By FY 2030, reduce the levelized cost of carbon dioxide removal technologies by 50% compared to current technologies. (NETL draft baseline studies for direct air capture)				
Commentary on 2024 Results (Action Plan if Not Met)	Goal was not met please see action plan provided. **Action Plan:** Award was made in October 2024, when FECM selected projects to support the Carbon Negative Shot objectives across carbon dioxide removal pathways through integrated pilot-scale testing of advanced technologies and detailed monitoring, reporting, and verification protocols.				
Comment	Typical laboratory and bench-scale R&D projects are conducted in 2–3-year time periods, after which point, systems analyses are conducted to validate current progress against target, and status of the technology in relation to the DOE program goals. Progress against the target will be updated accordingly during that period.				
Documentation, Limitations, Methodology, Validation, and Verification	https://www.energy.gov/fecm/funding-notice-carbon-negative-shot-pilots				

Program	FECM - Office of Carbon Management				
Performance Goal (Measure)	**Cost and Lifecycle Emissions of Carbon Dioxide Utilization** - Develop cost-effective carbon dioxide utilization technologies that result in products with lower lifecycle Greenhouse Gas (GHG) emissions compared to conventional products				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	N/A	Provide more references within the toolkit; Engage with external stakeholders for harmonization efforts with other Life Cycle Analysis (LCA) methodology as well as Techno-Economic Analysis (TEA) methodology; issue funding for at least one project fully integrated across the carbon value chain from source to product market.	Support integrated pilot projects for the algal uptake and mineralization pathways; Support benchmarking for catalytic systems.
Result	N/A	N/A	N/A	**Met**	**Met**
Endpoint Target	By FY 2030, demonstrate two transformational cost competitive carbon utilization technologies with lower validated lifecycle analysis based on NETL guidance compared to conventional products.				
Commentary on 2024 Results (Action Plan if Not Met)	In June 2024, FECM announced up to $16 million in federal funding for FOA for large-scale conversion of carbon dioxide emissions into environmentally responsible and economically valuable production – in support of mineralization technology, under DE-FOA-0003018. FOA 2614 (round 5) for Area of Interest (AOI) 1C; Non-Photosynthetic Biological Conversion of Carbon Dioxide (CO_2), AOI 1D: Conversion of CO_2 to Plastics, and AOI 1E: Conversion of CO_2 to Solid Carbon Products. Projects selected focus on higher TRL, algae conversion into products were issued in February 2024.				
Comment	Typical laboratory and bench-scale R&D projects are conducted in 2–3-year time periods, after which point, systems analyses are conducted to validate current progress against target, and status of the technology in relation to the DOE program goals. Progress against the target will be updated accordingly during that period.				
Documentation, Limitations, Methodology, Validation, and Verification	https://www.energy.gov/fecm/funding-notice-carbon-management https://www.energy.gov/fecm/project-selections-foa-2614-carbon-management-round-5 https://www.energy.gov/fecm/funding-notice-bipartisan-infrastructure-law-clean-fuels-products-shot-supporting-carbon				

Program	FECM - Office of Carbon Management				
Performance Goal (Measure)	**Carbon Storage** - Validate carbon storage potential in a variety of geologic formations.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	N/A	5 CarbonSAFE wells drilling completed	Establish a national network of regional initiative technical assistance partnerships.
Result	N/A	N/A	N/A	**Met** - 5	**Met**
Endpoint Target	By FY 2030, jointly establish with industry the build-out of commercial large-scale infrastructure, hubs and transport systems through development and validation of tools, establishment of field laboratories, basinal data collection, and technical assistance				
Commentary on 2024 Results (Action Plan if Not Met)	In August 2024, FECM announced the selection of nine university and industry-led projects to receive $44.5 million in federal funding to advance commercial-scale carbon capture, transport, and storage across the United States. Awards for these projects are expected in the second quarter of FY 2025.				
Comment	Field projects typically require long lead times for equipment and characterization and validation of storage potential. Leverage existing efforts Progress against the target will be updated accordingly during that period.				
Documentation, Limitations, Methodology, Validation, and Verification	https://www.energy.gov/fecm/funding-notice-regional-initiative-technical-assistance-partnerships-ritap-advance-deployment				

Program	FECM - Office of Carbon Management				
Performance Goal (Measure)	**IIJA – Carbon Utilization Program - 40302** - Carbon Utilization Procurement Grant Program for Eligible Entities; Award Utilization Procurement grants to eligible entities.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	N/A	N/A	Award up to $50m in Utilization Procurement Grants.
Result	N/A	N/A	N/A	N/A	**Not Met**

Endpoint Target	Award up to $50 million per year in grants to eligible entities to procure and use Carbon Oxides (COx)-based products for a total of up to $100 million by the end of FY26.
Commentary on 2024 Results (Action Plan if Not Met)	FECM has 'not met' its annual target, as no applications have been received. **Action Plan:** DE-FOA-0002829 has been amended to increase the award size and we continue to explore ways to expand the definition for eligible applicants. FECM will continue outreach to potential applicants and provide technical support for manufacturers interested in submitting their life cycle analysis.
Documentation, Limitations, Methodology, Validation, and Verification	https://www.energy.gov/fecm/funding-notice-bipartisan-infrastructure-law-carbon-utilization-procurement-grants

Program	FECM - Office of Carbon Management				
Performance Goal (Measure)	**IIJA – Carbon Capture FEED Studies – 40303** - Carbon Dioxide Transport FEED Studies - Accelerate the planning for CO2 transport by a variety of modes, such as through rail, trucks, ships, and pipelines.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	N/A	Select First Round FEED Projects	Select Second Round FEED Projects
Result	N/A	N/A	N/A	**Met**	**Met**
Endpoint Target	Support design studies focused on regional carbon transportation infrastructure by 2030.				
Commentary on 2024 Results (Action Plan if Not Met)	In April 2024, selected four projects from FOA 2730: Carbon Capture Technology Program, CO2 Transport, Front-End Engineering and Design. Additional project selections are expected in FY 2025.				
Documentation, Limitations, Methodology, Validation, and Verification	https://www.energy.gov/fecm/project-selections-foa-2730-carbon-capture-technology-program-co2-transport-front-end				

Program	FECM - Office of Carbon Management				
Performance Goal (Measure)	**IIJA – Carbon Storage Validation and Testing - 40305** - Accelerate the development of new or expanded commercial-scale geologic carbon storage projects and associated CO2 transport infrastructure, through the Carbon Storage Assurance Facility Enterprise (CarbonSAFE) Initiative				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	N/A	Select First Round of Projects	Select Second Round of CarbonSAFE Projects
Result	N/A	N/A	N/A	**Met**	**Not Met**
Endpoint Target	Develop 2 billion metric tons of commercial storage facilities capable of cumulative annual injection rate of 65 million metric tons CO2/ year by 2030.				
Commentary on 2024 Results (Action Plan if Not Met)	End of year goal not met, please see the action plan provided. **Action Plan:** In October 2024, FECM announced more than $518 million to support 23 projects for negotiation to support the development of new and expanded commercial large-scale carbon storage projects with the capability to store 50 or more million metric tons of CO2 over a 30-year period. All projects will support the Carbon Storage Assurance Facility Enterprise (CarbonSAFE) Initiative.				
Documentation, Limitations, Methodology, Validation, and Verification	https://www.energy.gov/fecm/funding-notice-bipartisan-infrastructure-law-carbon-storage-validation-and-testing				

Program	FECM - Office of Carbon Management				
Performance Goal (Measure)	**IIJA – Pre-Commercial Direct Air Capture Prize - 41005a** - Facilitate direct air capture technology innovation through technology commercialization curriculum and incubation, as well direct support for DAC technology innovators.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**

Target	N/A	N/A	N/A	Open the prize competition and receive initial applications for both the Precommercial Technology and Energy Program for Innovation Clusters (EPIC) Prizes	Select up to seven Phase 1: Develop Prize winners for the Precommercial Technology Prize, and up to five Phase 2: Move It winners for the Precommercial DAC EPIC Prize
Result	N/A	N/A	N/A	**Met**	**Met**
Endpoint Target	Enable at least one company develop an integrated bench-scale test unit of an innovative direct air capture technology.				
Commentary on 2024 Results (Action Plan if Not Met)	FECM announced 13 winners of the Phase 1 – 'Think It' Direct Air Capture Pre-Commercial EPIC Prize. In April 2024, FECM announced five finalists for Phase 2 – 'Move It' of the Direct Air Capture Pre-Commercial EPIC Prize for developing commercialization programs that support technologies to reduce carbon dioxide pollution by removing it directly from the atmosphere.				
Documentation, Limitations, Methodology, Validation, and Verification	https://www.energy.gov/fecm/funding-notice-direct-air-capture-pre-commercial-epic-prize https://www.energy.gov/fecm/articles/doe-announces-13-million-toward-innovations-carbon-dioxide-removal				

Program	FECM - Office of Carbon Management				
Performance Goal (Measure)	**IIJA – Commercial Direct Air Capture (DAC) Prize 41005b** - Facilitate the commercial demonstration of DAC technologies.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	N/A	Publish prize rules for two prize tracks within the Commercial DAC Prize: 1) a Commercial DAC Pilot Prize, and 2) a Carbon Dioxide Removal (CDR) Pilot Purchase Prize	Select and announce Phase 1 Winners for the CDR Purchase Pilot Prize and issue final rules for the Commercial DAC Pilot Prize.
Result	N/A	N/A	N/A	**Not Met**	**Met**

Endpoint Target	Award at least one prize that provides a pathway to achieving the goal of scaling DAC technologies to 50,000 tons per year.
Commentary on 2024 Results (Action Plan if Not Met)	In May 2024, FECM announced 24 semifinalists to receive a total of $1.2 million to scale up their carbon dioxide removal technologies with the Carbon Dioxide Removal Purchase Pilot Prize. Finalized rules for the Commercial DAC Pilot Prize and announced up to $52.5 million to advance carbon dioxide removal technologies that reduce legacy carbon dioxide pollution by removing it directly from the atmosphere to counter-balance emissions from hard-to-abate sectors. The Commercial Direct Air Capture Pilot Prize will provide capital to support Direct Air Capture pilots that have exceeded the technology readiness levels eligible for Pre-Commercial DAC Prizes but are not sufficiently demonstrated or commercially de-risked enough to be deployed in the Regional Direct Air Capture Hubs program
Documentation, Limitations, Methodology, Validation, and Verification	https://www.energy.gov/fecm/funding-notice-carbon-dioxide-removal-purchase-pilot-prize https://www.energy.gov/fecm/funding-notice-commercial-direct-air-capture-pilot-prize#:~:text=The%20Commercial%20DAC%20Pilot%20Prize%20offers%20up%20to,milestones%20over%20the%20course%20of%20the%20four%20phases.

New Nuclear Generation Technologies

Program	New Nuclear Generation Technologies				
Performance Goal (Measure)	**Advanced Modeling and Simulation** - Complete 90% of annual integrated program milestones to support deployment of advanced modeling and simulation (M&S) tools that will help solve important Light Water Reactor (LWR) performance and cost issues, accelerate advanced reactor concept development, and support NRC regulatory processes as requested.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	90 % annual milestones met	90 % annual milestones met	90 % annual milestones met	90 % annual milestones met	90 % annual milestones met
Result	**Met** - 100	**Met** - 94	**Met** - 95	**Met** - 96	**Met** - 100

Endpoint Target	On an ongoing basis, meet annual targets to enable industry to reduce operational costs and improve market competitiveness of existing Light Water Reactors (LWRs), and to accelerate commercial deployment of advanced reactors.
Commentary on 2024 Results (Action Plan if Not Met)	The program completed development of initial light-water reactor high-burnup and accident tolerant fuel modeling capabilities to support industry licensing needs, which will be fully implemented with a systematic assessment for impact of high-burnup on fuel reliability in FY 2025. This will support industry efforts to extend the life of existing nuclear plants through more economic operations. Significant progress was also made on enabling and accelerating industry's advanced reactor deployment efforts by increasing the capability of steady-state and transient modeling for high-temperature gas reactors with a pebble-shuffler capability for core start-up, steady-state, and transient scenarios.
Documentation, Limitations, Methodology, Validation, and Verification	Results are documented in quarterly performance memos from the Nuclear Energy (NE) program Deputy Assistant Secretary to NE Chief Operating Officer. Milestone completions are tracked and documented in the Program Information Collections System - Nuclear Energy (PICS-NE) system. Completion percentage is calculated as follows: numerator = # of milestones completed. Denominator = # of milestones planned. No known data limitations. NE validates performance results by comparing quarterly milestone completion information against a master milestone chart for the year. Mistakes go back to the NE subprogram for corrections and resubmittal. No known data limitations.

Program	New Nuclear Generation Technologies				
Performance Goal (Measure)	**Light Water Reactor Sustainability (LWRS)** - Complete 90% of annual program milestones to improve the reliability and economic performance of existing nuclear plants and further extend their operational life.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	90 % annual milestones met	90 % annual milestones met	90 % annual milestones met	90 % annual milestones met	90 % annual milestones met
Result	**Met** - 100	**Met** - 100	**Met** - 100	**Not Met** - 89	**Met** - 100
Endpoint Target	NE research, development, and demonstrations will enable the continuing operation of light water reactors.				

Commentary on 2024 Results (Action Plan if Not Met)	Digital Infrastructure Business Case Research Enables Comanche Peak Digital Upgrade Project. The LWRS Program produced a business case analysis on a set of safety-related and non-safety digital Instrumentation & Control (I&C) upgrades at Luminant's Comanche Peak nuclear plant. The business case analysis considers the costs of new equipment and plant modifications to determine if there is a financial benefit. Extracting Heat from pressurized water reactors for other uses. Research showed that up to 50% of the thermal heat can be extracted from a nuclear reactor safely without causing equipment damage. Artificial intelligence-based nuclear core design that helps save money. The LWRS Program has developed an artificial intelligence-based tool for pressure water reactors that combines core design and safety evaluation in one step.
Documentation, Limitations, Methodology, Validation, and Verification	Results are documented in quarterly performance memos from the Nuclear Energy (NE) program Deputy Assistant Secretary to NE Chief Operating Officer. Milestone completions are tracked and documented in the Program Information Collections System - Nuclear Energy (PICS-NE) system. Completion percentage is calculated as follows: numerator = # of milestones completed. Denominator = # of milestones planned. No known data limitations. NE validates performance results by comparing quarterly milestone completion information against a master milestone chart for the year. Mistakes go back to the NE subprogram for corrections and resubmittal. No known data limitations.

Program	New Nuclear Generation Technologies				
Performance Goal (Measure)	**Nuclear Science User Facilities (NSUF)** - Complete 90% of annual program milestones to provide industry, universities, and national laboratories access to unique nuclear energy research capabilities and expertise not normally accessible to the nuclear energy user community.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	90 % annual milestones met	90 % annual milestones met	90 % annual milestones met	90 % annual milestones met	90 % annual milestones met
Result	**Met** - 90	**Met** - 100	**Met** - 100	**Met** - 100	**Met** - 100
Endpoint Target	The Nuclear Science User Facilities (NSUF) represents a "prototype laboratory for the future," promoting the use of unique nuclear research facilities and encouraging active university, industry, and laboratory collaboration in relevant nuclear science research. On an ongoing basis, the NSUF, through competitive solicitations, provides a mechanism for research organizations to collaborate, conduct experiments and post-experiment analysis, and utilize high performance computing at facilities not normally accessible to these organizations.				
Commentary on 2024 Results (Action Plan if Not Met)	In FY 2024, the NSUF competitively awarded 7 fully funded large multi-year user access awards and 93 rapid turnaround experiment (RTE) awards. This includes the development of a new Super RTE solicitation to provide timely access to in-demand irradiation and post-irradiation examination capabilities for larger projects to be performed with a one-year period of performance. Finally, NSUF High Performance Computing (HPC) operated four supercomputers at Idaho National Laboratory with more than 1,750 users, performed technical user support on over 7,500 requests, and deployed a new supercomputer with faster processing speeds to support the nuclear energy computational resource demand across industry, national laboratories, and universities.				

Documentation, Limitations, Methodology, Validation, and Verification	Results are documented in quarterly performance memos from the Nuclear Energy (NE) program Deputy Assistant Secretary to NE Chief Operating Officer. Milestone completions are tracked and documented in the Program Information Collections System - Nuclear Energy (PICS-NE) system. Completion percentage is calculated as follows: numerator = # of milestones completed. Denominator = # of milestones planned. No known data limitations. NE validates performance results by comparing quarterly milestone completion information against a master milestone chart for the year. Mistakes go back to the NE subprogram for corrections and resubmittal. No known data limitations.

Program	New Nuclear Generation Technologies				
Performance Goal (Measure)	**ART Activities** - Complete 90% of annual program milestones to support the development of innovative reactor technologies that may offer improved safety, functionality and affordability, and build upon existing nuclear technology and operating experience.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	90 % annual milestones met	90 % annual milestones met	90 % annual milestones met	90 % annual milestones met	90 % annual milestones met
Result	**Not Met** - 83	**Met** - 92	**Not Met** - 89	**Met** - 93	**Not Met** - 84
Endpoint Target	Advanced Reactor Technologies (ART) performance endpoints range from the mid-term (2030s) to very long term. ART is focused on high value research for long-term concepts, R&D needs of promising mid-range concepts, and development of innovative technologies that benefit multiple concepts and stimulation of new ideas for transformational future concepts.				
Commentary on 2024 Results (Action Plan if Not Met)	In FY24, the ART program achieved progress toward its mission of closing technical and regulatory gaps to enable deployment of advanced reactors. Milestones completed this year reduce the risk and time needed to deploy advanced nuclear technologies, expand market opportunities for nuclear energy by supporting the development of non-electrical applications, and support a diversity of reactor designs that improve resource utilization. Submittal of the MARVEL PDSA will help support future safe start-up and operation of the MARVEL reactor and start of production of MARVEL fuel will help ensure that fuel is available to support the planned operation date for MARVEL. **Action Plan:** Of the 4 missed ART milestones, all are scheduled for completion during FY25.				
Documentation, Limitations, Methodology, Validation, and Verification	Results are documented in quarterly performance memos from the Nuclear Energy (NE) program Deputy Assistant Secretary to NE Chief Operating Officer. Milestone completions are tracked and documented in the Program Information Collections System - Nuclear Energy (PICS-NE) system. Completion percentage is calculated as follows: numerator = # of milestones completed. Denominator = # of milestones planned. No known data limitations. NE validates performance results by comparing quarterly milestone completion information against a master milestone chart for the year. Mistakes go back to the NE subprogram for corrections and resubmittal. No known data limitations.				

Program	New Nuclear Generation Technologies				
Performance Goal (Measure)	**Fuel Cycle R&D (FCR&D)** - Complete 90% of annual program milestones that advance fuel cycle technologies to support the enhanced availability, economics, safety, and security of nuclear-generated electricity in the United States.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	90 % annual milestones met	90 % annual milestones met	90 % annual milestones met	90 % annual milestones met	90 % annual milestones met
Result	**Not Met** - 80	**Met** - 97	**Not Met** - 88	**Met** - 94	**Met** - 91
Endpoint Target	Perform long-term R&D on advanced technologies that could lead to the next generation of sustainable fuel cycle options that have the potential to improve resource utilization and energy generation, reduce waste generation, enhance safety, and limit proliferation risk.				
Commentary on 2024 Results (Action Plan if Not Met)	FCRD achieved the following successes in FY24: Commercial production of High-Assay Low-Enriched Uranium (HALEU) in the United States is demonstrated for the first time. The United States leads in establishing the "Sapporo Five" to develop a secure, reliable global nuclear fuel supply chain. New analysis shows there is 60-95 gigawatts of new nuclear capacity potentially available at a majority of existing or retired nuclear power plant sites in the United States. Department issues Draft Environmental Impact Statement (EIS) advancing administration's goal to boost domestic High Assay Low-Enriched Uranium (HALEU) production.				
Documentation, Limitations, Methodology, Validation, and Verification	Results are documented in quarterly performance memos from the Nuclear Energy (NE) program Deputy Assistant Secretary to NE Chief Operating Officer. Milestone completions are tracked and documented in the Program Information Collections System - Nuclear Energy (PICS-NE) system. Completion percentage is calculated as follows: numerator = # of milestones completed. Denominator = # of milestones planned. No known data limitations. NE validates performance results by comparing quarterly milestone completion information against a master milestone chart for the year. Mistakes go back to the NE subprogram for corrections and resubmittal. No known data limitations.				

Nuclear Infrastructure

Program	Nuclear Infrastructure				
Performance Goal (Measure)	**Facility Availability - Idaho Facilities Management Program** - Enable nuclear research and development activities by providing operational facilities and capabilities, as measured by availability percentages.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**

Target	80 % availability	80	80 % availability	80 % availability	80 % availability
Result	**Met** - 83	**Met** - 89	**Not Met** - 45.5	**Met** - 85	**Met** - 92
Endpoint Target	Maintain the percentage of facilities and capabilities that are available for research and development activities at 90% or better.				
Commentary on 2024 Results (Action Plan if Not Met)	The availability throughout the FY 2024 of facilities and capabilities at both ATR and MFC was higher than the needed operational demand, thereby enabling NE's R&D mission accomplishment.				
Documentation, Limitations, Methodology, Validation, and Verification	Performance Memorandum provided by Idaho Facilities Management, providing Fourth Quarter FY 2024 Performance Results for Idaho Facilities Management Measures. Percentage is attained by dividing the number of Effective Full Power Days (EFPD) numerator by the number of scheduled EFPDs denominator. No known data limitations.				

Program	Nuclear Infrastructure				
Performance Goal (Measure)	**Facility Availability - Idaho Facilities Management Program** - Enable nuclear research and development activities by providing operational facilities and capabilities, as measured by availability percentages.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	80 % availability	80	80 % availability	80 % availability	80 % availability
Result	**Met** - 83	**Met** - 89	**Not Met** - 45.5	**Met** - 85	**Met** - 92
Endpoint Target	Maintain the percentage of facilities and capabilities that are available for research and development activities at 90% or better.				
Commentary on 2024 Results (Action Plan if Not Met)	The availability throughout the FY 2024 of facilities and capabilities at both ATR and MFC was higher than the needed operational demand, thereby enabling NE's R&D mission accomplishment.				
Documentation, Limitations, Methodology, Validation, and Verification	Performance Memorandum provided by Idaho Facilities Management, providing Fourth Quarter FY 2024 Performance Results for Idaho Facilities Management Measures. Percentage is attained by dividing the number of Effective Full Power Days (EFPD) numerator by the number of scheduled EFPDs denominator. No known data limitations.				

Program	Nuclear Infrastructure

Performance Goal (Measure)	**Plant and Construction: Cost and Schedule Baseline Variance** - Execute line-item construction projects within approved cost profiles and schedules, using cost performance index and schedule performance index (using earned value management systems), with the green level maintaining indexes between 0.9 and 1.10, the yellow level between 0.8 and 1.20 and the red level less than 0.8 or greater than 1.20.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	90 % of projects with cost performance indexes and schedule performance indexes between 0.9 and 1.15.	90 % of projects with cost performance indexes and schedule performance indexes between 0.9 and 1.10.	90 % of projects with cost performance indexes and schedule performance indexes between 0.9 and 1.10	90 % of projects with cost performance indexes and schedule performance indexes between 0.9 and 1.15	90 % of projects with cost performance indexes and schedule performance indexes between 0.9 and 1.10
Result	**Met** - 100	**Met** - 100	**Met** - 100	**Met** - 100	**Met** - 100
Endpoint Target	Maintain the total percentage of projects with good cost and schedule indexes at 90% or better.				
Commentary on 2024 Results (Action Plan if Not Met)	Currently, the Office of Nuclear Energy is tracking only one baselined project, the Sample Preparation Laboratory (SPL) project. In FY 2024, the SPL project reached a significant milestone of substantial construction completion. This milestone was marked by a ribbon cutting ceremony on September 4, 2024. The project team completed interior finishes for all office spaces, developed a punch list of construction items for acceptance and closeout, and initiated commissioning activities in support of building turnover. The project is on track for completion within the established baseline with SPI and CPI within green reporting thresholds.				
Documentation, Limitations, Methodology, Validation, and Verification	Performance Memorandum provided by Idaho Facilities Management, providing performance information for IFM Facility Availability and IFM Line-Item Construction Projects for Fourth Quarter FY 2024. Cost and schedule indexes are calculated using earned value management systems. No know data limitations.				

Advanced Research Projects Agency - Energy

Program	Advanced Research Projects Agency - Energy				
Performance Goal (Measure)	**Award Funding** - Cumulative percentage of award funding committed 45 days after award selections are announced				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	≥ 70 %	≥ 90 %	≥ 90 %	≥ 90 %	≥ 90 %

Result	**Met** - 100	**Met** - 100	**Met** - 100	**Met** - 100	**Met** - 100
Endpoint Target	As of FY 2021 and annually thereafter, commit ≥90% of award funding within 45 days of announcement of award selections.				
Commentary on 2024 Results (Action Plan if Not Met)	In FY24 100% of awardee funding was committed within 45 days of selection. After announcement, selected funds are encumbered for award.				
Documentation, Limitations, Methodology, Validation, and Verification	Data Sources: ARPA-E Internal Records. Available funding is pulled from the DOE STARS financial system. Limitations: No substantive limitations. Verification and Validation: ARPA-E internal records are reconciled to STARS data monthly post-GL close.				

Building Technologies

Program	Building Technologies				
Performance Goal (Measure)	**Standards** - Issue energy efficiency standards in line with statutory requirements.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	2 Standards	1 Standard	8 Standards	10 Standards	10 Standards
Result	**Met** - 2	**Exceeded** - 5	**Exceeded** - 10	**Met** - 10	**Exceeded** - 11
Endpoint Target	Standards will be issued in line with the statutorily defined standards review schedule.				
Documentation, Limitations, Methodology, Validation, and Verification	The energy conservation standards performance goal is based on the statutory requirements and associated deadlines. Additional results in recent years include test procedures for final rules delivered by fiscal year were 7 in FY14, 8 in FY15, 14 in FY16, 8 in FY17 and 1 in FY18. Energy Conservation Program: Test Procedures for Compressors https://www.federalregister.gov/documents/2017/01/04/2016-29427/energy-conservation-program-test-procedures-for-compressors Energy Conservation Program: Energy Conservation Standards for Commercial Packaged Boilers https://www.federalregister.gov/documents/2020/01/10/2019-26356/energy-conservation-program-energy-conservation-standards-for-commercial-packaged-boilers				

Strategic Objective 2 – Accelerate deployment of clean technologies at scale and pace.

Strategic Goal Measure: By the end of 2025, demonstrate wind, solar, and/or battery storage projects providing grid services for at least a month at up to 3 utility systems with more than 50% of instantaneous renewable energy penetration.

- OCED awarded fourteen industry-led projects and twelve cooperative agreement awards supporting the Energy Improvements in Rural or Remote Areas program. OCED also awarded five lab-led demonstration projects under the Long Duration Energy Storage program that will demonstrate grid services within multiple utility services regions.
- OCED announced selections for the Distributed Energy Systems NOFO in September 2024 that will support this objective.

Strategic Goal Measure: By the end of 2026, Initiate construction of two advanced nuclear reactors demonstrations.

- OCED continues to make positive progress on its ARDP program.

Strategic Goal Measure: Develop cost-effective, efficient, and reliable Carbon Dioxide Removal (CDR) approaches that facilitate just and sustainable deployment.

- FY24: LPO has multiple active loan applications for CO2 transport and storage facilities that could help to establish the midstream infrastructure needed to unlock scale up of CDR technologies and reduce cost.

Strategic Goal Measure: Develop technologies to advance safe and environmentally sustainable processing, refining, and separation of critical minerals and processing and manufacturing of carbon-based materials (e.g., graphite, fiber) that impact the scale of the markets.

- FY24: LPO reached conditional commitment on several loans focused on critical minerals, including Rhyolite Ridge ($700M for lithium carbonate processing) and Thacker Pass ($2.26M for lithium carbonate processing). This comes on top of early loans, such as Syrah Vidalia ($102.1M for graphite processing), that continue to accelerate domestic development of critical minerals across the supply chain, as well as many battery manufacturing and recycling loans that catalyze the use of such critical minerals.

Strategic Goal Measure: By the end of 2026, Initiate construction of two advanced nuclear reactors demonstrations.

- FY24: LPO conditionally committed to and closed a $1.52B loan to Holtec to repower and upgrade Palisades Nuclear Power Plant, the first recommissioning of a shut-down nuclear power plant in US history. LPO also coordinates closely with its partner offices NE (on broad nuclear strategy) and OCED (on its Advanced Reactor Demonstration Program) and drove the update of its Advanced Nuclear

Liftoff Report through deep engagement with industry experts.

Strategic Goal Measure By the end of 2024, create market insights from data analyses through publication of at least nine Pathways to Commercial Liftoff reports.

- FY24: LPO continued its contribution to the Pathways to Commercial Liftoff report initiative by supporting the Offshore Wind liftoff report, an update to the Advanced Nuclear liftoff report, and an Electricity Demand Growth topic brief. This is on top of the 8 liftoff reports of which LPO supported completion in FY23.

Strategic Goal Measure: By the end of 2025, demonstrate wind, solar, and/or battery storage projects providing grid services for at least a month at up to 3 utility systems with more than 50% of instantaneous renewable energy penetration.

- In May 2024, OE announced selections for $15 million in long-duration storage demonstration projects that will integrate renewables including wind energy.

Strategic Goal Measure: Weatherize over 154,000 homes.

- On schedule (includes retrofits funded with annual appropriations and under the Infrastructure Investment and Jobs Act (P.L. 117–58)

Strategic Goal Measure: By the end of 2024, create market insights from data analyses through publication of at least nine Pathways to Commercial Liftoff reports. In FY 2023-2024, OTT worked closely with OCED, LPO, EERE, and external stakeholders to develop and publish 11 Pathways to Commercial Liftoff reports including: Advanced Nuclear, Carbon Management, Clean Hydrogen, Long Duration Energy Storage, Industrial Decarbonization, Chemicals & Refining, Cement, Virtual Power Plants, Offshore Wind, Innovative Grid Deployment, and NextGen Geothermal.

Clean Energy Demonstrations

Program	Clean Energy Demonstrations				
Performance Goal (Measure)	**Select/Award Clean Energy Demonstrations Projects** - Publicly announce selection of companies for award negotiation				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	N/A	N/A	80 Percent
Result	N/A	N/A	N/A	N/A	**Met** - 85
Endpoint Target	100% of all OCED Federal Selection decisions made and 100% of IIJA/IRA funds have been finalized at least for the initial phase of the awards by the end of FY 2026.				
Commentary on 2024 Results (Action Plan if Not Met)	OCED met the first quantifiable metric in this measure (85% of IIJA /IRA funds have selections that are publicly announced). However, OCED fell short on issuing awards to all of selectees by the end of the fiscal year.				
Documentation, Limitations, Methodology, Validation, and Verification	OCED Internal regularly updated Award Tracking smartsheet.				

Weatherization and Intergovernmental Programs

Program	Weatherization and Intergovernmental Programs				
Performance Goal (Measure)	**Retrofits** - Weatherize homes of low-income families.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	38,000 Homes Weatherized	38,500 Homes Weatherized	40,000 Homes Weatherized	40,000 Homes Weatherized	40,000 Homes Weatherized
Result	**Not Met** - 21,250	**Not Met** - 33,765	**Not Met** - 30,629	**Not Met** - 27,000	**Data Not Available**
Endpoint Target	Retrofit a total of 380,000 homes between 2021 and 2030.				
Commentary on 2024 Results (Action Plan if Not Met)	Anticipate FY 2024 result will be available by the end of December 2024. Program reviewing target calculation methodology as the 40,000 target is unobtainable due to increased costs for materials and labor. Grantees experiencing slower than expected unit completions related to workforce shortages at Grantee and Subgrantee offices and contracting delays. Program is working with grantees to support increased training, technical assistance and program guidance to assist with ramp up activities for both Weatherization Assistance Program Annual Formula and Infrastructure Investment and Jobs Act projects.				

Documentation, Limitations, Methodology, Validation, and Verification	Homes weatherized are reported on a quarterly basis. Reports are due 30 days after the close of the applicable reporting period through PAGE (Performance and Accountability for Grants in Energy) -- the online tool for grant performance reporting. Quarterly reports are quality reviewed and approved by Project Officers before the home retrofit data is summated and reported as an annual result.

Vehicle Technologies

Program	Vehicle Technologies				
Performance Goal (Measure)	**Mobility** - Through modeling and simulation, demonstrate feasible system-level pathways to improve mobility in a major metropolitan area (% improvement in Mobility Energy Productivity) 2021: Identify at least one implementation partner (city or Metropolitan Planning Organization) who will use DOE's mobility modeling and simulation capabilities in their transportation planning process (number of partners) 2020: Establish baseline energy productivity (number of cities). 2019: Complete initial phase of the SMART Mobility National Laboratory Consortium by publishing a results report for each of the five research pillars.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	5 Cities	1 City/Implementation Partner	20 % Mobility Energy Productivity	25 % Mobility Energy Productivity	> 25 % Mobility Energy Productivity
Result	**Met** - 5	**Met** - 1	**Met** - 20	**Met** - 25	**Met** - 25
Endpoint Target	By 2022, work with one major city to identify solutions through modeling and simulation that improve mobility (MEP) by 20% by 2040.				
Commentary on 2024 Results (Action Plan if Not Met)	Worked closely with Dallas, Atlanta, and Chicago to demonstrate pathways through high-fidelity modeling to improved urban mobility by 25% by 2050. Completed the individual scenario runs and a combined run of all scenario levers, for analysis of mobility solutions to improve MEP for Chicago, Atlanta, and Dallas, and presented the most promising pathways to reach 25% MEP improvements by 2050. We found that through a combination of high electrification, increased telecommuting, shift to increased transit-oriented development, and a high congestion pricing toll for entering expressways, travel efficiency/MEP could be improved up to 40% by 2050 in the VTO high-technology progression scenarios for the Dallas Fort Worth (DFW) area and 35% in Atlanta. All levers behave similarly in the two cities, except transit-oriented development, which has minimal impact on Atlanta, and congestion pricing, which has less impact. For Chicago, we have seen up to 53% increase in transportation system efficiency/MEP, with about 46% of that due to vehicle electrification, and an additional 7% from a combination of congestion pricing, transit improvement and Transportation Network Companies (TNC) corner-to-corner pickups and off-hours delivery.				
Documentation, Limitations, Methodology, Validation, and Verification	In FY20, baseline analysis of Mobility Energy Productivity (MEP) was completed for 5 different cities/regions. Fully functional transportation system models that use strategic computing capabilities will be developed to evaluate MEP in future scenarios. In FY21, baseline Mobility Energy Productivity (MEP) will first be calculated using existing data sets. The large-scale transportation models developed in FY20 will be used to (1) calibrate to existing data and MEP calculations, and (2) conduct scenario analysis using strategic computing capabilities to indicate the most promising pathways to improve mobility (MEP). The MEP metric is further explained here: www.nrel.gov/docs/fy19osti/72946.pdf In FY22, EEMS will work with at least one major city to identify system-level solutions through modeling and simulation that improve mobility (MEP) by 20% by 2040.				

	This goal is related to using modeling and simulation to identify the feasibility of MEP improvement by x% by 2040. For both FY2022 and FY2023, we are modeling a future (2040) transportation system in a city, to identify ways to increase mobility energy productivity (MEP). In FY2022, we're trying to show how to improve MEP by 20%, and in FY2023 we're trying to show how to improve MEP by 25%. FY2024 will translate MEP modeling insights into implementable EEMS technology pathways across metropolitan areas, beyond 2024, we expect that we will not continue to ramp-up the MEP goal but identify a different metric/goal starting.

Solar Energy

Program	Solar Energy				
Performance Goal (Measure)	**Solar Products** - Accelerate the process to develop new, innovative solar products relevant to the domestic upstream manufacturing sector from concept to pilot testing in less than one calendar year (number of products developed within a year).				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	2 products	4 products cumulative	12 products cumulative	16 products cumulative	20 products cumulative
Result	**Met** - 2	**Exceeded** - 8	**Exceeded** - 14	**Met** - 16	**Met** - 20
Endpoint Target	6 products by 2022 (cumulative since FY 2020)				
Commentary on 2024 Results (Action Plan if Not Met)	All programming was executed on time				
Documentation, Limitations, Methodology, Validation, and Verification	In 2007 DOE and NREL launched the first round of the PV Incubator through the Solar America Initiative to accelerate promising solar technologies to market. Through the history of this program, it took approximately 2.5 years to go from concept to pilot testing. The American Made Solar Prize is testing a new prize-based funding structure that is reducing this to one year, depending on the complexity of the product and the risk tolerance of the pilot testing partner. It focuses on rapid, early-stage product innovation and development and an early transition to private sector testing. Products must be relevant to the domestic upstream manufacturing sector. Due to the promise shown in the American Made Solar Prize model, SETO is conducted an American Made Solar Software prize for FY22 (launched FY21). It focused on rapid, early-stage product innovation and development with an early transition to the private sector.				

Bonneville Power Administration

Program	Bonneville Power Administration				
Performance Goal (Measure)	**BPA Hydropower Generation Efficiency Performance** - Achieve 76% average Availability Factor (AF) hydro-generating capacity through efficient performance of Federal hydro-system processes and assets, including the joint efforts of BPA, the Army Corps of Engineers and the Bureau of Reclamation.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	≥ 76 percent	≥ 76 percent	≥ 76 percent
Result	N/A	N/A	**Met** - 80.1	**Met** - 76.7	**Not Met** - 75.8
Endpoint Target	Achieve 76% average Availability Factor (AF) hydro-generating capacity				
Commentary on 2024 Results (Action Plan if Not Met)	Long term outages, and pushbacks on return to service continue to prevent FCRPS hitting target marks for Availability Factor in Q4 and EOY. **Action Plan:** BPA has returns to service for Chief Joseph Units scheduled for Q1 FY2025. BPAs other impacted units scheduled for return Q1/2 FY2025.				
FY 2024 Note	Availability factors and many other performance metrics are a part of the IEEE (Std 762 10.6) standard definitions for use in reporting electric generating unit reliability, availability, and productivity. These standardized set of metrics are used by the Generating Availability Data System (GADS). As calculated by GADS, the current hydropower industry average for generating units greater than 30MW is 80.9%. Utilities set their availability targets based on their regional economic and availability needs.				
Documentation, Limitations, Methodology, Validation, and Verification	Documented in the Quarterly Findings Memo (from BPA Chief Operating Officer to BPA Administrator). This memo is used to describe, document, and validate the quarterly results before they are declared final through a process of checks and review, first by subject matter experts, then by managers and vice presidents, and then by senior executives.				

FECM - Office of Carbon Management

Program	FECM - Office of Carbon Management				
Performance Goal (Measure)	**Cost & Rate of CO2 Capture from Power & Industrial Facilities** - Develop cost-effective, 95% efficient, and reliable CO2 capture technologies for power plants and industrial facilities validated at TRL 7 by 2030				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	Conduct bench-scale testing under actual flue gas conditions of at least one technology type	Conduct at least two bench-scale tests under actual flue gas conditions	N/A	Following NEPA approval, initiate construction on two large pilots (10Mwe) with a target of 90% capture efficiency and more than 10% cost reduction vs. coal generation reference plant, validated at TRL 7	Commence construction on two small carbon capture pilots in the industrial (min 1,000 tCO2/yr) and natural gas sector (0.5 – 1 MW) with a target of 95% capture efficiency and more than 30% cost reduction vs. reference plant, validated at TRL 6.
Result	**Met** - 1	**Met** - 2	N/A	**Met**	**Met**
Endpoint Target	By FY 2030, transformational technologies that capture greater than 95% of the CO2 and less than 30% of the cost compared to conventional technologies for large point sources (power and industrial applications) are validated at TRL 7 and available for demonstration. (Baselines to be confirmed)				
Commentary on 2024 Results (Action Plan if Not Met)	Commenced construction on two small carbon capture pilots. At the National Carbon Capture Center, SRI commenced construction of Mixed Salt Ammonia (MSP) pilot and EPRI/Pacific Northwest National Laboratory started N-(2-ethoxyethyl)-3-morpholinopropan-1-amine (EEMPA) solvent testing.				
Comment	Typical laboratory and bench-scale R&D projects are conducted in 2–3-year time periods, after which point, systems analyses are conducted to validate current progress against target, and status of the technology in relation to the DOE program goals. Progress against the target will be updated accordingly during that period.				
Documentation, Limitations, Methodology, Validation, and Verification	https://www.energy.gov/fecm/articles/doe-invests-45-million-reduce-carbon-pollution https://nationalcarboncapturecenter.com/2024/10/16/epri-and-collaborators-to-begin-water-lean-solvent-testing-at-the-national-carbon-capture-center/ https://www.gillettenewsrecord.com/news/local/article_e5c68140-9493-11ef-ba52-9b9173856771.html https://blogs.illinois.edu/view/7447/409342776				

Advanced Research Projects Agency - Energy

Program	Advanced Research Projects Agency - Energy				
Performance Goal (Measure)	**New Company Formation** - Number of new companies formed as a direct result of ARPA-E funding.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	≥ 3 new companies founded	≥ 5 new companies founded	≥ 5 new companies founded	≥ 5 new companies founded	≥ 10 new companies founded
Result	**Met** - 12	**Met** - 21	**Met** - 22	**Met** - 19	**Met** - 16
Endpoint Target	As of FY 2024 and annually thereafter, ARPA-E funding will support the formation of ≥ 10 new companies each year.				
Commentary on 2024 Results (Action Plan if Not Met)	As reported in September 2024, ARPA-E funded research has led to the formation of at least 166 new companies. This represents an increase of 16 companies from the prior September 2023 press release.				
Documentation, Limitations, Methodology, Validation, and Verification	Data Sources: New company formation is initially identified through various online channels (e.g., company websites, Pitchbook database) and through direct outreach to appropriate project team members (e.g., Awardee / Principal Investigator, Program Director, Technology-to-Market [T2M] Advisor, Technology Scientific and Engineering Technical Assistance [Tech SETA]). Limitations: Potentially incomplete or erroneous information provided from the performers. ARPA-E mitigates this risk by cross-checking the data through multiple sources. Verification and Validation: Cross-check the data through multiple sources (e.g., company websites, Pitchbook database, awardee, etc.)				

Loan Programs Office

Program	Loan Programs Office				
Performance Goal (Measure)	**Generation Capacity of Projects Receiving Loan Guarantees** - Increase annual generation capacity from projects receiving DOE loan guarantees that have achieved commercial operations. (Gigawatts, GW)				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	≥ 4 GW	≥ 3.9 GW	≥ 4.6 GW	≥ 5 GW	≥ 5.1 GW
Result	**Met** - 4	**Met** - 3.9	**Not Met** - 3.9	**Met** - 5	**Exceeded** - 6.2
Endpoint Target	Continue to meet annual target until the loans are repaid.				
Commentary on 2024 Results (Action Plan if Not Met)	Vogtle Unit Four was online beginning FY2024 Q3. With Vogtle Unit Four online, the Generation Capacity Performance Measure was exceeded for 2024.				
Documentation, Limitations, Methodology, Validation, and Verification	LPO results are based on monthly reports from borrowers on the electricity generation capacity from their projects. LPO Engineers within its Technical and Environmental Division and Independent Engineers contracted by LPO test the electricity generation capacity performance of each project at the time of construction completion. From there LPO Engineers analyze monthly reports from borrowers on the electricity generation capacity from their projects to monitor and validate the electricity generation capacity performance and reporting. Monthly reports allow LPO Engineers the ability to recognize performance and reporting deviations since the initial test performed at the time of construction completion. There is no limitation on the impact of assessing the performance results. Includes generation capacity for Kahuku, Tonopah, Genesis, Granite, Blue Mountain and KEPCO Alamosa, which have graduated from the LPO portfolio.				

Program	Loan Programs Office				
Performance Goal (Measure)	**CO2 Reductions Loans Guarantee** - Estimated cumulative CO2 emissions reductions of projects receiving loan guarantees that have achieved commercial operations.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	≥ 31,000,000 mt	≥ 39,000,000 mt	≥ 45,800,000 mt	≥ 49,800,000 mt	≥ 51,000,000 mt
Result	**Exceeded** - 35,662,000	**Met** - 39,192,000	**Not Met** - 42,541,963	**Not Met** - 46,835,369	**Exceeded** - 55,385,935
Endpoint Target	On an ongoing basis, projects receiving loan guarantees that have achieved commercial operations will have lower estimated annual CO2 emissions reductions compared to “business as usual energy generation.				

Commentary on 2024 Results (Action Plan if Not Met)	Vogtle Unit Four was online beginning FY2024 Q3. With Vogtle Unit Four online, the CO2 Reductions Performance Measure was exceeded for 2024.
Documentation, Limitations, Methodology, Validation, and Verification	LPO results are based on quarterly reports from borrowers on the electricity generation derived from their projects. From there LPO multiplies the reported electricity generation by the CO2 avoidance conversation factor. The CO2 avoidance conversation factor is the EIA estimate of annual CO2 emissions from energy consumption at conventional power plants and combined heat and power plants divided by EIA estimate of annual US electric power industry generation. To validate the performance and performance reporting of electricity generation LPO Engineers within its Technical and Environmental Division test the electricity generation derived from borrowers' projects during annual on-site visits. It is worth noting that the reported electricity generation from borrowers are real time whereas, the data used to calculate the CO2 avoidance conversation factor are actuals from the prior year or two years (depending on EIA updates) because at the time of reporting only estimates are available for the current year. CO2 reduction estimates based on 2024 CO2 conversion factor of 0.4021. This includes CO2 reductions from Kahuku, Tonopah, Genesis, Granite, Blue Mountain, Mesquite and KEPCO Alamosa, which have graduated from the LPO portfolio.

Program	Loan Programs Office				
Performance Goal (Measure)	**ATVM Reduction in Gasoline Usage** - The cumulative reduction in gasoline usage achieved using all vehicles on the road using advanced technologies funded through the ATVM loan program.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	20.7 billion gallons	23.1 billion gallons	≥ 24.8 billion gallons
Result	N/A	N/A	**Exceeded** - 21.7	**Exceeded** - 23.6	**Exceeded** - 25.3
Endpoint Target	An aggregate amount of 18.7 billion gallons of gasoline reduced from FY2009 to FY2021. This goal has a lifespan of 10 years after the last ATVM vehicle or component reported in our portfolio, which is currently 2031 (last reported vehicle manufactured in 2021).				
Commentary on 2024 Results (Action Plan if Not Met)					
Documentation, Limitations, Methodology, Validation, and Verification	The ATVM portfolio's annual gasoline reduction is modeled using performance reports from the borrower, and benchmark assumptions and simulations provided by Argonne National Laboratory. The modeled data includes cars manufactured and/or qualifying components in conjunction with the ATVM loan program from 2009 to 2024				

Hydropower Incentives

Program	Hydropower Incentives				
Performance Goal (Measure)	**Hydropower Incentives** - Assess BIL's hydroelectric incentive impacts that incentivized powering non-powered dams, increased generation efficiency, and improvements in grid resiliency, dam safety, and environmental mitigation				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	N/A	N/A	Develop analytics to track new capacity, improved efficiency, and increased resiliency resulting from the three IIJA-funded hydropower incentives programs.
Result	N/A	N/A	N/A	N/A	**Met**
Endpoint Target	By the end of FY 2030, develop analytics and publish projections regarding the future growth of U.S. hydropower capacity including the number of new projects developed, how the hydroelectric incentives have helped realize that growth, and projections regarding future growth.				
Commentary on 2024 Results (Action Plan if Not Met)	GDO developed analytics and are currently tracking capacity, efficiency, and resiliency metrics.				

Grid Planning and Development

Program	Grid Planning and Development				
Performance Goal (Measure)	**TP&P - Interregional Planning and Permitting** - Engage in planning and modeling activities (e.g. National Transmission Planning Study) to identify transmission that will provide broad-scale benefits to electric customers; inform regional and interregional transmission planning processes; and identify interregional and national strategies to accelerate decarbonization while maintaining system reliability.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	N/A	GDO will conduct four meetings or workshops, virtual or in-person, with stakeholders to inform inputs into the National Transmission Planning Study.	Complete the National Transmission Planning Study and start to assist regional planning bodies in implementing the results of the study through further analysis, modeling, or other planning activities.
Result	N/A	N/A	N/A	**Met**	**Met**
Endpoint Target	By the end of FY 2030, demonstrate the value of long-range planning activities on a national scale by developing conceptual transmission plans that industry can refine, adopt, and use to demonstrate the benefits decarbonization and resiliency programs and how they can help to optimize long-term grid investments.				
Commentary on 2024 Results (Action Plan if Not Met)	With support from the national laboratories, drafted the National Transmission Planning Study chapters, obtained stakeholder review, and revised report through DOE concurrence processes Published the National Transmission Planning Study on 10/3/2024. Prepared outreach and engagement s plan; and strategy to assist planning bodies in implementing the results is in process.				
Documentation, Limitations, Methodology, Validation, and Verification	https://www.energy.gov/gdo/events/october-17-national-transmission-planning-study-technical-review-committee-meeting https://www.nrel.gov/docs/fy24osti/89363.pdf https://www.energy.gov/sites/default/files/2023-12/National%20Transmission%20Needs%20Study%20-%20Final_2023.12.1.pdf				

Grid Technical Assistance

Program	Grid Technical Assistance				
Performance Goal (Measure)	**TP&P -Technical Assistance** - Tools and Analyses for efficient transmission permitting - Engage in activities that will ease permitting and siting constraints that delay or hold back expansion of the Nation's electric transmission capacity.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	N/A	Identify three analytical products or tools in support of conducting transmission permitting.	Advance two analytical products and integrate/launch one in support of conducting transmission permitting.
Result	N/A	N/A	N/A	**Met**	**Met**
Endpoint Target	By the end of 2030, GDO-developed tools and analyses in support of transmission permitting will be successfully demonstrated, utilized, and attributed by other agencies, states, industry, and other stakeholders to have accelerated transmission infrastructure development.				
Commentary on 2024 Results (Action Plan if Not Met)	Successfully developed, issued and socialized the CITAP final rule and developed, tested, launched and socialized CITAP portal. Also, expanded use of the GEM tool for application with the CITAP Portal. On May 31, 2024, the "CITAP Portal" went live. The CITAP Portal functions as a repository for GDO, Developers and other federal Agencies to collaborate on the environmental requirements associated with large scale transmission projects.				
Comment	In FY 2023, this performance goal was under the Grid Technical Assistance Program. The FY 2024 Budget continues this performance goal under the Transmission Planning and Permitting program's Technical Assistance subprogram.				
Documentation, Limitations, Methodology, Validation, and Verification	https://www.energy.gov/articles/biden-harris-administration-announces-final-transmission-permitting-rule-and-latest				

Wholesale Electricity Market Technical Assistance and Grants

Program	Wholesale Electricity Market Technical Assistance and Grants				
Performance Goal (Measure)	**D&M - Wholesale Electricity Market Technical Asst and Grants** - Support the evaluation, formation, or expansion of wholesale markets				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	N/A	Identify priority topics in regions without organized markets and in existing wholesale markets. Release a competitive solicitation by September 2023 that requests studies proposals on priorities, and additional study topics, available for states, RTOs/ISOs, regional groups. Sign and execute WIEB cooperative agreement.	Release funding opportunity announcement and award at least two grants to support states or regional entities in evaluating new or improving existing wholesale electricity markets.
Result	N/A	N/A	N/A	**Met**	**Met**
Endpoint Target	By the end of 2030, GDO efforts through FOAs, studies, and other technical assistance to states will result in the formulation and/or expansion of wholesale electricity markets in the U.S.				
Commentary on 2024 Results (Action Plan if Not Met)	Selected and awarded six recipients for grant projects from Round 1 focused on addressing wholesale market improvements and expansion in all three Interconnections.				

Interregional and Offshore Transmission Planning

Program	Interregional and Offshore Transmission Planning				
Performance Goal (Measure)	**Interregional and Offshore Wind Transmission Planning** - Develop planning recommendations for successfully integrating 85 GW of offshore wind resources by 2030				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	N/A	Conduct four regional workshops to inform and complete a radial and network-ready strategy for Atlantic offshore wind transmission	Provide technical assistance and support Tribal Nation participation at 10 events through the Tribal Nation OSW Transmission Technical Assistance program.
Result	N/A	N/A	N/A	**Met**	**Met**
Endpoint Target	By the end of FY 2030, support planning across Atlantic, West Coast, and Gulf of Mexico region to enable offshore wind deployment to reach the Administration's goal of 30 GW of offshore wind deployment by 2030 and enable a pathway to 110+ GW by 2050.				
Commentary on 2024 Results (Action Plan if Not Met)	GDO successfully fulfilled 37 tribal member requests for participation in events				
Documentation, Limitations, Methodology, Validation, and Verification	https://www.nrel.gov/docs/fy24osti/89524.pdf				

IIJA Transmission Facilitation Program

Program	IIJA Transmission Facilitation Program				
Performance Goal (Measure)	**Transmission Facilitation Program** - Provide Federal support to overcome financial hurdles in the development of large-scale new transmission lines and upgrades of existing transmission as well as the connection of microgrids in select States and U.S. territories.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	N/A	Issue a Request for Proposals for capacity contracts that commits DOE to purchasing up to 50% of the maximum capacity of a new or upgraded transmission line.	Award at least one capacity contract to an eligible entity that commits DOE to purchasing up to 50% of the maximum transmission capacity created by a new or upgraded transmission line. Issue a second RFP for capacity contracts that commits DOE to purchasing up to 50% of the maximum capacity of a new or upgraded transmission line, evaluate applications, and select one or more applicants to enter due diligence and contract negotiations. Issue an RFP for Public Private Partnerships (PPPs)
Result	N/A	N/A	N/A	**Met**	**Met**
Endpoint Target	By the end of FY 2030, transmission development projects that are supported by the Transmission Facilitation Program's financing mechanisms (capacity contracts, public-private partnerships, and direct loans) will have begun construction.				
Commentary on 2024 Results (Action Plan if Not Met)	Round 1 of Capacity Contracts selected, awarded and obligated to three eligible entities. A second RFP for capacity contracts was issued in Q2 FY24 with 13 projects applying. An RFP for Public Private Partnerships was issued in Q2 FY24 with 2 projects applying. Selections finalized for 4 Round 2 capacity contracts and 1 PPP to enter due diligence and contract negotiation.				

IIJA - Modeling and Assessing Energy Infrastructure Risk

Program	IIJA - Modeling and Assessing Energy Infrastructure Risk				
Performance Goal (Measure)	**Modeling and Assessing Energy Infrastructure Risk** - Climate Resilience Framework for the Electric Grid - Develop a climate resilience framework for the electric grid, designed to analyze and mitigate the impacts of both acute weather events and chronic climatic conditions. This includes forecasting infrastructure damage, understanding event frequency and severity, assessing asset and geographic vulnerabilities, and identifying critical assets for focused protection efforts, thereby ensuring continuous power supply and infrastructure robustness.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	N/A	Assess various solution for precision timing source and timing synchronization by a national lab at a Power Marketing Administration (PMA).	Deploy and test a solution for a complementary timing source and distribution of timing securely in an operational utility environment at a PMA.
Result	N/A	N/A	N/A	**Met**	**Met**
Endpoint Target	By the end of FY 2028, scaled up access to actionable nationwide climate impact information will be available to be utilized for planning practices, capital investment, regulatory filings, grant applications, and other activities.				
Commentary on 2024 Results (Action Plan if Not Met)	BPA deployment and testing demonstrated that PTP is viable for power system use and limitations for each deployment option.				

Hydrogen and Fuel Cell Technologies

Program	Hydrogen and Fuel Cell Technologies				
Performance Goal (Measure)	**H2 Carrier Materials** - Establish baseline and identify hydrogen carrier materials and associated processes for bulk hydrogen transport and storage.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	2 Materials	3 Materials Cumulative	5 Materials Cumulative	6 Materials Cumulative

Result	N/A	**Met** - 2	**Met** - 3	**Met** - 5	**Met** - 6
Endpoint Target	8 hydrogen carrier materials by 2025.				
Commentary on 2024 Results (Action Plan if Not Met)	Six cumulative hydrogen carrier materials which have the potential to outperform compressed or liquid hydrogen storage/delivery methods have been identified. Methanol (MeOH) was examined by ANL, and methylcyclohexane (MCH), and dibenzyltoluene (DBT) were examined by ANL and LBNL. Through industry partnerships, dimethylether (DME) has been optimized by Oberon Fuels with LANL, and formic acid is being developed by OCOChem with PNNL. The metal-organic framework (MOF) Ni2(m-dobdc) has been identified by LBNL. These efforts have identified specific use cases, including transmission and export, backup power, and industrial processes, where these materials can provide advantages over conventional compressed gas and liquid hydrogen storage technologies.				
Documentation, Limitations, Methodology, Validation, and Verification	The various application needs of the H2@Scale initiative (https://www.energy.gov/eere/fuelcells/h2scale), identification and development of hydrogen-dense materials and processes for use as hydrogen carriers is needed. Materials and processes identified must have the potential to meet at least two technology-specific targets (e.g., efficiency, energy density, specific energy, charge/discharge rates and/or materials cost) to reach the ultimate dispensed hydrogen cost goal for the specified application (e.g., $5/kg H2 for heavy-duty transportation applications). The parameters of efficiency, energy density, specific energy, charge/discharge rates, and materials cost, coupled with the storage temperature and pressure, are key determinants in the suitability of a hydrogen carrier material for a specified application. Research and development will be coordinated with the Hydrogen Materials – Advanced Research Consortium (HyMARC).				

Strategic Objective 3 – Engage internationally to achieve global decarbonization and energy security while expanding markets for U.S. clean energy goods and services.

Strategic Goal Measure: Support expansion of U.S. investment in and deployment of hydrogen in the Americas and elsewhere, where the United States has a competitive advantage.

- OCED has awarded 4 hydrogen hub projects. Funding in the Hydrogen provision will significantly expand the US hydrogen economy, leading to industry capacity expansions, cost reductions, growth in supply chains, community benefits, and improved workforce capabilities.

Strategic Goal Measure: Strengthen European energy security, including by supporting non-EU U.S. allies in synchronizing with the European grid, as a means of deterring the use of energy as a weapon.

- OE funded the Global Power System Transformation (G-PST) to support research and development in transmission reliability. This effort includes European system operators and regional organizations. U.S. system operators are also founding members. Activities included webinars, workshops, reports, and coordination with DOE Grid Technical Assistance (renamed to Grid Solutions) project on Resource Adequacy.

Strategic Goal Measure: Advance R&D partnerships with OECD Indo-Pacific partners in Hydrogen, CCUS, methane abatement, grid management, and energy storage.

- OE co-chairs a taskforce on energy storage under the U.S.-India Climate and Clean Energy Agenda. In FY 2024, a joint Steering Group was appointed, 6 Working Groups with 96 identified members were established, and a series of 12 webinars co-led by OE was conducted.
- OE co-chairs a taskforce on energy storage under the U.S.-India Climate and Clean Energy Agenda. In FY 2024, a joint Steering Group was appointed, 6 Working Groups with 96 identified members were established, and a series of 12 webinars co-led by OE was conducted.
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Strategic Goal Measure: Facilitate up to eight collaborations to accelerate the deployment of U.S. manufactured advanced nuclear reactors.

- In FY24, DOE/NE established two regional Clean Energy Training Centers in Poland and Ghana, and is finalizing a third in the UAE to support deployment of U.S. nuclear technologies in the three regions; commenced the U.S.-UK Joint Standing Committee on Nuclear Energy Cooperation; implementing the triple nuclear energy pledge among 25 countries; advanced coordination of nuclear

fuel supply chain free from Russia through the Sapporo 5 group; and continued to support and advocate for U.S. technologies in Africa, Europe (Central/Eastern and Northern), and India through the negotiation of new and revitalization of existing agreements.

Strategic Goal Measure: Expand and/or initiate bilateral and multilateral nuclear energy collaborations.

- DOE/NE established the U.S.-Africa Nuclear Energy Summit (USANES) series to support deployment of nuclear energy technologies in the African continent and held an inaugural meeting Ghana with a follow-on meeting on industrial readiness in Kenya. DOE/NE also developed and concluded Statement of Intents (SOIs) with Sweden, the Netherlands, and Lithuania to advance commercial opportunities for U.S. companies and deepened engagement both at the technical and senior level at the International Atomic Energy Agency (IAEA) and Nuclear Energy Agency (NEA) to advance U.S. civil nuclear and strategic priorities.

Strategic Objective 4 – Catalyze clean energy solutions for job creation and economic growth, including with a robust place-based focus.

Strategic Goal Measure: Participation of women, Black, Indigenous, and people of color (BIPOC) workers, disadvantaged workers, individuals from priority communities, veterans, or displaced fossil fuel workers, measured by hours worked on DOE deployment projects.

- FY24: Beginning in FY24, all LPO Programs require Community Benefits Plans (CPBs) and Workforce Reports. LPO is publishing its first set of CBPs in October 2024. LPO has already begun to receive our first set of Workforce Reports that will track some of this data. These plans and reports reflect the commitment of LPO borrowers to diverse hiring and workforce participation. In addition, LPO completed in FY24 its first loans through the Energy Infrastructure Reinvestment (EIR) Program, which specifically supports repurposing and reinvesting in existing energy infrastructure and the communities where these projects are located.

Goal 2: Strengthen the Nation's Energy Security, Resiliency, Affordability, and Reliability

Strategic Objective 5. Develop and deploy innovative solutions to harden energy infrastructure against physical threats including climate change

Strategic Goal Measure: Develop methodology to bridge response and restoration functions to recovery and mitigation technologies and technical assistance programs to improve community resilience.

- CESER issued a competitive lab call after hurricane Helene to support community recovery and resiliency efforts.
- CESER provided resources for States to use in the development and strengthening of their State Energy Security Plans, including "Risk Assessment Essentials for State Energy Security Plans," and Risk Mitigation Approach Guidebook for States.
- CESER developed cyber technical assistance capability to address the complexities of cyber incident response to operational technology deployed across the energy sector. The capability is designed to complement federal interagency partners, focused on providing unique tools and subject matter expertise related for to the energy sector. FY 2024 developments to EAGLE-I™, DOE's situational awareness platform, to now provide near real-time situational awareness across the energy sector, included integrated remote-sensing situational awareness and energy infrastructure damage assessments from unmanned aerial systems, updated data processing hardware, and continued refinement of interdependency modeling of impacts across lifeline sectors

Program	Southeastern Power Administration				
Performance Goal (Measure)	**SEPA System Reliability Performance - NERC** - Attain average North American Electric Reliability Corporation (NERC) compliance ratings for NERC Control Performance Standard 1 (CPS1) of greater than or equal to 100 percent.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	≥ 100 CPS1 rating	≥ 100 CPS1 rating	≥ 100 CPSI rating	≥ 100 CPSI rating	≥ 100 CPSI rating
Result	**Met** - 283.85	**Met** - 398.6	**Met** - 202.12	**Met** - 212.79	TBD
Endpoint Target	Ensure the reliability of the electrical grid by attaining a NERC CPS 1 rating of equal to or greater than 100 percent each year.				
Comment	CPS1 measures generation/load balance on one-minute intervals.				

Documentation, Limitations, Methodology, Validation, and Verification	NERC Control Performance Standards Summary (Operations Center). The North American Electric Reliability Corporation's (NERC) Control Performance Standard (CPS) establishes the statistical boundaries for electrical Balance Authority Area Control Error (ACE) values, ensuring the system frequency is always within its scheduled value, CPS1 defines the permissible distribution of all ACE values in an interconnection, based on the expected frequency performance, and must be met 100 percent of the time.

Western Area Power Administration

Program	Western Area Power Administration				
Performance Goal (Measure)	**WAPA - System Reliability Performance - NERC Rating** - Attain average North American Electric Reliability Corporation (NERC) compliance ratings for NERC Control Performance Standard 1 (CPS1) of greater than or equal to 100 percent.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	≥ 100 CPS1 Rating	≥ 100 CPS1 Rating	≥ 100 CPS1 Rating	≥ 100 CPS1 Rating	≥ 100 CPS1 Rating
Result	**Met** - 157.4	**Met** - 156	**Met** - 161	**Met** - 166.33	**Met** - 161.94
Endpoint Target	Ensure the reliability of the electrical grid by attaining a NERC CPS1 rating of equal to or greater than 100 percent each year.				
Comment	CPS1 measures generation/load balance on one-minute intervals.				

Southwestern Power Administration

Program	Southwestern Power Administration				
Performance Goal (Measure)	**SWPA System Reliability Performance - NERC** - Attain average North American Electric Reliability Corporation (NERC) compliance ratings for NERC Control Performance Standard 1 (CPS1) of greater than or equal to 100 percent.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	≥ 100 CPS1 Rating	≥ 100 CPS1 Rating	≥ 100 CPS1 Rating	CPS>100	CPS>100
Result	**Met** - 208	**Met** - 199.23	**Met** - 199	**Met** - 184.3	**Met** - 184

Endpoint Target	Ensure the reliability of the electrical grid by attaining a NERC CPS1 rating of equal to or greater than 100 percent each year.
Comment	CPS1 measures generation/load balance on one-minute intervals.
Documentation, Limitations, Methodology, Validation, and Verification	Data provided by the Division of Scheduling and Operations for quarterly updates. CPS1 measures generation/load balances at one-minute intervals. This information is tracked through Southwestern's Supervisory Control and Data Acquisition System (SCADA). It is a 10-minute clock on a rolling 12-month average. A balancing authority's (BA) ability to balance supply and demand is measured by its area control error (ACE), a real-time value that is continuously tracked in each BA's SCADA system. The North American Electric Reliability Corporation's (NERC) Control Performance Standard (CPS) establishes the statistical boundaries for ACE values, ensuring the system frequency is always within its scheduled value. CPS1 defines the permissible distribution of all ACE values in an interconnection, based on the expected frequency performance. Documentation: NERC Control Performance Report submitted by each SWPA Balancing Authority.

Transmission Reliability and Resilience

Program	Transmission Reliability and Resilience				
Performance Goal (Measure)	**Transmission Reliability and Resilience** - Develop, implement, and demonstrate technologies for minimizing the risk of system failure and cascading outages to improve the operation of electric power system.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	Develop and test the algorithmic methods for risk identification and mitigation to improve the resiliency of the electric power system.	Test and improve computationally efficient methods to capture and effectively notify operators of wide-area power system wave propagation and system health metrics to improve resiliency of the electric power system by providing timelier information required for preventing catastrophic system failure.	Identify controlling algorithms that can assist operators in reliably operating systems with different penetration levels of renewables.
Result	N/A	N/A	**Met**	**Met**	**Met**

Endpoint Target	Demonstrate that the developed algorithm can effectively control the reliable operation of an electric power system under different levels of renewable penetration. By the end of 2030, develop controlling algorithms that assist operators in planning and mitigating a real time size system with many integrated renewables.
Commentary on 2024 Results (Action Plan if Not Met)	This was a first-of-its-kind project aimed at helping industry with interconnection queuing selections. The developed algorithm will be further enhanced to create a tool that ISOs/RTOs can use for interconnection queuing selections.
Documentation, Limitations, Methodology, Validation, and Verification	The data for testing the capability came from the California Independent System Operator (CAISO) web page. It is publicly available. The result of the study was communicated with selected stakeholders that are impacted by the changes for validation and verification. Due to the complexity of the work, we only received a couple of validated and verified cases instead of all. However, we continue to work with industry stakeholders to further verify the result of the study and, based on that, enhance the tool.

Program	Southeastern Power Administration				
Performance Goal (Measure)	**SEPA Operating Cost** - Annual Operating Cost Performance: Provide power at the lowest possible cost by keeping total operation and maintenance cost per kilowatt-hour generated at or below the National median for public power for 100+ customers.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	≤ 0.056 /$KWh	≤ 0.062 /$KWh	≤ 0.061 /$KWh	≤ 0.061 /$KWh	≤ 0.07 /$KWh
Result	**Met** - 0.015	**Met** - 0.015	**Met** - 0.017	**Met** - 0.017	TBD
Endpoint Target	Control annual Operations and Maintenance costs, thereby providing power at the lowest possible cost.				
Comment	Due to the seasonal nature of hydropower generation throughout the fiscal year, a rolling 1-year total will be calculated for both Operating & Maintenance (O&M) expense information as well as Net Generation. O&M data is obtained through the financial management system, while generation data is compiled from the power operations reports of each contributing generating agency. The annual target for each performance reporting cycle is determined by referencing the latest annual report on financial and operating ratios as published by the American Public Power Association (APPA). Specifically, SEPA will refer to the "Median Values by Customer Size Class" table. The APPA compiles benchmark information from both a survey instrument and data residing with the Energy Information Administration.				
Documentation, Limitations, Methodology, Validation, and Verification	Data provided by Power Resources Division, calculated in house for quarterly report. National yearly target is provided from a published APPA report. This average is used as a benchmark. Southeastern calculates cost per kilowatt hour average based upon monthly production reports which tracks hydropower generation expenses and total transmission. The information is used to come up with a cost per kilowatt hour.				

Program	Southwestern Power Administration				
Performance Goal (Measure)	**SWPA Operating Cost** - Annual Operating Cost Performance: Provide power at the lowest possible cost by keeping total operation and maintenance cost per kilowatt-hour generated at or below the National median for public power for 100+ customers.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	≤ 0.056 /$ kWh	≤ 0.062 /$kWh	≤ 0.061 /$kWh	≤ 0.061 /$kWh	≤ 0.061 /$kWh
Result	**Met** - 0.0166	**Met** - 0.0182	**Met** - 0.0177	**Met** - 0.0192	**Met** - 0.0235
Endpoint Target	Control annual Operations and Maintenance costs, thereby providing power at the lowest possible cost.				
Commentary on 2024 Results (Action Plan if Not Met)	0.0235				
Comment	Due to the seasonal nature of hydropower generation throughout the fiscal year, a rolling 1-year total will be calculated for both Operating & Maintenance (O&M) expense information as well as Net Generation. O&M data is obtained through the financial management system, while generation data is compiled from the power operations reports of each contributing generating agency. The annual target for each performance reporting cycle is determined by referencing the latest annual report on financial and operating ratios as published by the American Public Power Association (APPA). Specifically, SWPA will refer to the "Median Values by Customer Size Class" table. The APPA compiles benchmark information from both a survey instrument and data residing with the Energy Information Administration.				
FY 2024 Note	FY2020 End of Year Result - Met - 0.0172				
Documentation, Limitations, Methodology, Validation, and Verification	Data provided by Division of Resources and Rates, calculated in house for quarterly report. National target is provided from a published APPA report. Southwestern uses this average as a benchmark. Southwestern calculates cost per kilowatt hour average based upon monthly production reports which tracks hydropower generation expenses and total transmission in Oracle financial management systems. The information is extrapolated to come up with a cost per kilowatt hour.				

Bonneville Power Administration

Program	Bonneville Power Administration				
Performance Goal (Measure)	**BPA Repayment of Federal Power Investment to Keep Costs Low** - Meet planned annual repayment of principal on Federal power investments to help keep costs low consistent with sound business principles.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	≥ 100 percent	≥ 100 percent	≥ 100 percent	≥ 100 percent	≥ 100 percent
Result	**Met** - 100	**Met** - 100	**Met** - 100	**Met** - 100	**Met** - 100
Endpoint Target	Continue to meet planned annual repayment of principal				
Commentary on 2024 Results (Action Plan if Not Met)	BPA's ability to meet its payment obligation for the Federal investment is due to our financial risk policies and actual cash balances. BPA sets rates to assure a 97% probability of making its annual Treasury payment. BPA has a financial cash reserves policy in place to protect liquidity and trigger rate increases should cash reserves decline below a certain level. At the end of FY 2024, BPA cash reserves were $1,299 million.				
Comment	As a capital-intensive business, with constant requirements to maintain extensive generation and transmission system assets across the region, meeting BPA's planned federal annual repayment is vital to maintaining a high credit rating which enables access to lower cost non-federal capital to make needed system investments.				
Documentation, Limitations, Methodology, Validation, and Verification	Quarterly financial review reports with year-end cash estimates are the basis of quarterly results. Transactional records from U.S. Treasury systems during the year and a transactional report submitted from BPA to U.S. Treasury in September confirm actual annual results.				

Strategic Objective 6. Advance adoption of solutions to prevent and respond to cyber vulnerabilities and incidents

Strategic Goal Measure: Complete two group assessments through the clean energy cyber accelerator for participating technology companies and asset owners to validate cybersecurity technologies and evaluate defense measures against the most critical cyber threat scenarios

- In FY24, CESER completed Track 1 Cohort, 1 Baseline Operating Environment, technical assessment, and reports

Cyber Resilient & Secure Utility Communications Networks

Program	Cyber Resilient & Secure Utility Communications Networks				
Performance Goal (Measure)	**SecureNet** - Develop and validate communication solutions for the electric sector that are required to support existing and emerging/future grid functionality				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	N/A	Develop end-to end architectural framework for communication infrastructure in support of the existing and emerging utility systems and applications.	Develop resilient grid communications architectures; create a testbed between national labs to support communications technology assessment; evaluate communication-enabled grid technology to support the reliability, resiliency, and security of the grid; publish technical findings and whitepapers.
Result	N/A	N/A	N/A	**Not Met**	**Met**
Endpoint Target	As an ongoing process, use the simulation to evaluate available and emerging communication technologies for meeting utility systems communications functionality, performance, and security requirements.				
Commentary on 2024 Results (Action Plan if Not Met)	Two separate projects have delivered artifacts for grid data architectures and the edge-distribution system interface architecture to support resilience of the next-generation grid. The Secure Pathways for Resilient Communications (SPaRC) testbed has reached initial operating capability and is continuing towards full operating capability. The SPaRC testbed was used to conduct spectrum interference testing, to evaluate how commercial unlicensed spectrum use can impact the key grid communications links, which could impact grid operational reliability and resiliency. SecureNet projects published three additional white papers and five technical bulletins.				

Documentation, Limitations, Methodology, Validation, and Verification	We currently measure this program based on research outputs and the mechanisms by which they are exposed to industry and other stakeholders. Project reports, whitepapers, and bulletins are published online. In addition, program management and research staff participate in industry engagements. In FY 2024, these engagements included multiple conferences, several webinars, and face-to-face discussions with industry stakeholders—including a communications-focused, executive-level industry roundtable discussion.

Risk Management Tools and Technology

Program	Risk Management Tools and Technology				
Performance Goal (Measure)	**Risk Management Tools and Technology** - Cybersecurity - Develop new protective measures to reduce risks from cyber incidents. Performance Measure Cited in the FY22-26 Strategic Plan Goal 2: Strategic Objective 6				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	N/A	Partner with energy sector stakeholders within DOE and across federal agencies to develop an RMT RD&D Roadmap	Complete an RMT RD&D Peer Review to assess progress, guide the research direction and if necessary re-direct research efforts. The Peer Review will evaluate all research activities in the RMT RD&D project portfolio.
Result	N/A	N/A	N/A	**Met**	**Met**
Endpoint Target	By the end of FY 2030, achieve sensor and technology adoption by 500 energy sector companies for enhanced cyber threat information sharing.				
Commentary on 2024 Results (Action Plan if Not Met)	In August and September 2024, RMT convened an expert panel to review projects in progress and provide feedback. The report is expected in October.				

Information Sharing, Partnerships and Exercises/Policy, Preparedness and Risk

Program	Information Sharing, Partnerships and Exercises/Policy, Preparedness and Risk				
Performance Goal (Measure)	**Policy, Preparedness and Risk Analysis** - Preparedness – establish new preparedness capabilities that integrate distributed energy resources into preparedness activities for industry and state and local partners to advance adoption of solutions to prevent and respond to cyber vulnerabilities and incidents				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	N/A	Host 2 or more virtual meetings, develop an issue brief and action guide for state energy offices on cybersecurity risks, needs and opportunities in EV charging. Develop a regulators grid data sharing framework balancing electric distribution grid operators needs and DER developers and can be tailored to state goals and priorities.	Publish Cybersecurity of Distribution Systems Report in consultation with industry, state and local partners, develop supplemental Distributed Energy Resource materials and workshops for state and local partners to address report findings as needed.
Result	N/A	N/A	N/A	**Met**	**Met**
Endpoint Target	Expand the CESER Preparedness and Risk Analysis portfolio of products and engagement activities to include emerging distributed energy resource considerations. By 2026, add representatives of DER (solar, storage, EV, and others) to information sharing activities. Through engagement, improve risk analysis and sector awareness of existing and new threats associated with increasing DERs in the energy system.				
Commentary on 2024 Results (Action Plan if Not Met)	CESER released a set of cybersecurity baselines for electric distribution systems and DER, developed in partnership with the National Association of Regulatory Utility Commissioners (NARUC) and energy sector stakeholders. As state interest in cybersecurity regulations grows, so does the potential of bespoke regulations, resulting in complexity, confusion and cost for entities operating in multiple states. The report is currently in executive coordination for final publication.				

Strategic Objective 7. Secure the Supply Chain for a Robust Clean Energy Transition

Strategic Goal Measure: Incorporate cybersecurity supply chain recommendations into the Energy Cyber Sense program.

- In FY24 CESER established the Supply Chain Cybersecurity Principles to establish and reinforce the shared responsibility for supply chain cybersecurity. This includes manufacturers and suppliers, system integrators and solutions providers, and energy companies and utilities.

Strategic Objective 8. Support an effective emergency response capability in the federal government for responding to critical energy events

Strategic Goal Measure: Ensure operational readiness of the SPR by achieving 95% of monthly maintenance and accessibility goals in all years and maintaining the capability to drawdown at a 4.4 million barrels/day rate.

- SPR achieved 98.47 of monthly maintenance and accessibility goal for FY 2024.

Strategic Goal Measure: Enhance predictive modeling capabilities of risks and vulnerabilities to energy infrastructure.

- In FY24, CESER continued to develop and refine predictive modeling capability to help estimate the number of potential customer outages from Hurricanes, including updating underlying fragility curves used to assess potential impacts and incorporating additional variables like transmission, as well as developing models for other natural hazards.
- CESER also continued efforts on development of critical infrastructure interdependencies models, to be able to support preparedness and response efforts with better understanding of potential impacts to energy systems, as well as understanding what critical infrastructure may be impacted by outages to the energy sector.

Strategic Goal Measure: Improve situational awareness through analysis and visualization capability.

- In FY24, CESER worked to improve EAGLE-I, DOE's primary situational awareness platform for the energy sector, including updated hardware to ensure system performance, incorporating new data feeds and development of new features to help maintain situational awareness. The ability to incorporate damage assessment and situational awareness data from unmanned aerial systems (UAS) and other remote sensing platforms was also integrated into the EAGLE-I platform.

Strategic Goal Measure: Completed the Energy Threat Analysis Center (ETAC) Pilot with emphasis on establishing operational governance, expanded industry partnership, and planning, developing, and piloting new threat analysis capabilities. (FY24 Q4)

- CESER concluded the pilot of the Energy Threat Analysis Center (ETAC) to become an enduring CESER capability. ETAC published several independent advisories, chief among them the Mitigation Checklist and a Hunt Guide for mitigating and detecting Volt Typhoon intrusions in energy systems, a PRC-affiliated cyber actor. ETAC also contributed to numerous government reports by providing energy sector-specific insight and expertise concerning specialized Industrial Control System technologies. ETAC collaborated with industry to provide better insight into risks facing the energy sector and simultaneously establish a more effective information feedback loop between government and industry to mitigate cyber risks.

Strategic Goal Measure: Enhance predictive modeling capabilities of risks and vulnerabilities to energy infrastructure.

- On September 18th, OE announced a Notice of Intent for Human-Centric Analytics for Resilient & Modernized Power sYstems (HARMONY) Notice of Funding Opportunity. This intends to improve risk assessment and communication by developing more advanced analytics to help grid operators predict, prevent, and mitigate cascading failures in power grids.

Strategic Goal Measure: Improve situational awareness through analysis and visualization capability.

- OE leads the Digitizing Utilities Prize program, which connects electric utilities with interdisciplinary teams of software developers and data experts to transform digital systems and data analytics for utilities in the energy sector. Round 2 of the prize was launched in October 2023 and OE announced 11 winners from Round 2 Phase 1 in July 2024.
- On July 9th, 2024, OE announced selectees of $7.5 million to support projects that will use cutting-edge data analytics and sensor technologies to advance grid reliability and resilience.

Response and Restoration

Program	Response and Restoration				
Performance Goal (Measure)	**Response and Restoration** - Provide Emergency Support Function (ESF) #12 cadre of responders to support an effective emergency response capability in the federal government for responding to critical energy events				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	N/A	Provide annual refresher training for all responders, with no less than 75% target completion	Provide annual refresher training for all responders, with no less than 75% target completion
Result	N/A	N/A	N/A	**Met**	**Met**
Endpoint Target	To ensure that DOE has resources required to fulfill the Department's responsibilities as the coordinating agency for Emergency Support Function (ESF) #12, under the National Response Framework, and as the Sector Risk Management Agency for the energy sector, the Office of Cybersecurity, Energy Security, and Emergency Response (CESER) maintains a cadre of volunteer responders and subject matter experts across the DOE complex, ready to deploy to support response efforts. The cadre is managed by CESER's Response and Restoration division, including recruitment, retention, and training. To ensure readiness to responses, at least 75% of existing responders shall complete annual refresher training annually to achieve an overall retention rate of 2560% of more.				
Commentary on 2024 Results (Action Plan if Not Met)	CESER conducted emergency responder recruitment and training across the DOE enterprise, adding 30 new trained responders, resulting in a total of 130 ESF #12 trained members. Five in-person refresher trainings were conducted, and 95% of responders were provided training. Additionally, CESER developed and implemented Personnel Qualification Standards and hands-on Mentor/Mentee training program.				

Petroleum Reserves

Program	Petroleum Reserves				
Performance Goal (Measure)	**Drawdown Readiness** - Ensure the operational readiness of the SPR through the achievement of equal to or greater than 95% of the annual average of monthly maintenance performance and reliability goals.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	≥ 95 % of monthly maintenance and accessibility goals achieved	≥ 95 % of monthly maintenance and accessibility goals achieved	≥ 95 % of monthly maintenance and accessibility goals achieved	≥ 95 % of monthly maintenance and accessibility goals achieved	≥ 95 % of monthly maintenance and accessibility goals achieved
Result	**Met** - 96.94	**Met** - 95.42	**Met** - 98.23	**Met** - 98.51	**Met** - 98.47
Endpoint Target	Achieve 95% of monthly maintenance and accessibility goals in all years.				

Program	Petroleum Reserves				
Performance Goal (Measure)	**Multi-Year Oil Sales** - Ensure cost efficiency of drawdown operations while meeting mandates of all legislatively directed oil sales.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	Annual drawdown costs < 1.5% of revenue earned	Annual drawdown costs < 1.5% of revenue earned	Annual drawdown costs < 1.5% of revenue earned	< 1.5 Annual drawdown costs of revenue earned	< 1.5 Annual drawdown costs of revenue earned
Result	**Met** - 0.96	**Met** - 0.4	**Met** - 0.24	**Met** - 0.16	**Data Not Available**
Endpoint Target	Achieve annual drawdown costs of <1.5% of revenue earned.				
Commentary on 2024 Results (Action Plan if Not Met)	From March 2023 to June 2023, the SPR conducted the FY 2023 Mandatory Oil Sales. The FY 2023 Mandatory Oil Sales were the most recent crude oil sales conducted. No crude oil sales were conducted during FY 2024				

Program	Petroleum Reserves				
Performance Goal (Measure)	**SPR Modernization Project** - Ensure project schedule and cost efficiency through achievement of satisfactory performance index scores that assess the magnitude of variation from the established schedule and cost baselines.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	≥ 0.85 on both the Cost and Schedule Performance Index	≥ 0.85 on both the Cost and Schedule Performance Index	≥ 0.85 on both the Cost and Schedule Performance Index	≥ 0.85 on both the Cost and Schedule Performance Index	≥ 0.85 on both the Cost and Schedule Performance Index
Result	**Data Not Available**	**Data Not Available**	**Met**	**Met**	**Met**
Endpoint Target	Reach overall ≥ .90 score on both the Cost and Schedule Performance Index at project closeout.				
Commentary on 2024 Results (Action Plan if Not Met)	CPI = 0.99 SPI = 0.88				

Program	Petroleum Reserves				
Performance Goal (Measure)	**SPR Operating Cost** - Ensure the cost efficiency of SPR operations through the achievement of an operating cost per barrel of crude oil storage capacity of no more than $0.30 per barrel.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	≤ 0.3 $ operating cost per barrel	≤ 0.3 $ operating cost per barrel	≤ 0.3 $ operating cost per barrel	≤ 0.35 $ operating cost per barrel	≤ 0.35 $ operating cost per barrel
Result	**Met** - 0.254	**Met** - 0.27	**Met** - 0.28	**Met** - 0.31	**Met** - 0.27
Endpoint Target	Achieve ≤ $ 0.30 operating cost per barrel.				

Program	Petroleum Reserves				
Performance Goal (Measure)	**Sustained (90-day) Drawdown Rate** - Maintain the capability to drawdown the SPR at the design drawdown rate of 4.415 million barrels per day.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	≥ 4.21 MMB/Day drawdown readiness rate	≥ 4.2 MMB/Day drawdown readiness rate	≥ 3.1 MMB/Day drawdown readiness rate	≥ 1.4 MMB/Day drawdown readiness rate	≥ 1.15 MMB/Day drawdown readiness rate
Result	**Not Met** - 4.14	**Not Met** - 4.18	**Met** - 4.06	**Met** - 2.12	**Met** - 1.18
Endpoint Target	Maintain a 90-day drawdown rate of 4.415 million barrels per day by the end of the Life Extension 2 project. In FY 2023, the Strategic Petroleum Reserve (SPR) has scheduled construction activities designed to repair, replace, and upgrade existing infrastructure. During the construction phase of this project, SPR sites will be shut down on an alternating schedule to perform certain construction and improvements that are part of the project, thus temporarily reducing our drawdown rate. While SPR sites may be non-operational in overlapping months at times, all efforts have been made to minimize this overlap. Additionally, as SPR crude oil is sold to meet Congressional legislation, the reduction in inventory will decrease the drawdown rate.				

Strategic Objective 9. Implement consolidated interim storage for the Nation's spent nuclear fuel

Strategic Goal Measure: Continue development of a phased and adaptive consent-based siting process that is voluntary and will provide interested communities opportunities to learn, consider, and eventually decide if they are interested in volunteering to host an interim storage facility.

- DOE issued its phased and adaptive consent-based siting process in April of 2023, and has conducted numerous outreach and engagement efforts following the release. Feedback from public requests for information, meetings, webinars, conferences, and other gatherings have led to valuable feedback that was factored into the release of a funding opportunity for $26M. This funding, in part, will allow several interested communities opportunities to learn more about volunteering to host an interim storage facility in the future.

Strategic Goal Measure: Engage with relevant Tribal, state and local governments, public, and DOE stakeholders in FY 2024 to solicit feedback from interested communities, groups, industry, and others.

- DOE has achieved its goal of advancing its engagement and collaboration efforts with relevant Tribal, state and local governments in FY24. For example, DOE conducted community scale interviews in 146 communities to obtain a broader range of feedback from sources that do not traditionally participate in the public comment opportunities.
- DOE will continue working with current host communities of energy projects and other interested communities, groups, industry leaders to refine the CBS process and reflect a community-driven approach.

Strategic Goal Measure: Consider funding mechanisms to provide resources in FY 2024 to communities interested in engaging with the Department on federal interim storage topics, considerations, and options.

- DOE has achieved its goal of issuing $24M in funds for public participation, mutual learning, and capacity building via the CBS consortia. This public feedback in turn has informed future iterations of the CBS Process Document. The consortia will continue to operate until fall of CY2025 and continue to distribute resources to communities and inform the implementation of the federal interim storage program.

Strategic Goal Measure: Continue engagement with communities and interested groups in FY 2023–2026 through a consent-based siting process.

- This goal is ongoing. At present, the consortia have conducted 119 individual engagement events as part of the DOE capacity

building initiative focused on consent-based siting.

Strategic Goal Measure: Continue to hire new Federal staff in FY 2022-2026 in technical areas, social sciences, and communications to support growth in consent-based siting and consolidated interim storage work areas.

- Inability to hire FTEs has hindered the overall program progress. Staffing shortage supplemented by non-federal staff (i.e., contractors) in the areas of communication and public engagement and outreach.

Strategic Goal Measure: Complete fabrication and testing of purpose-built railcars in FY 2023–2026.

- Supplemental testing of the Atlas railcar will complete in FY 2026. Fabrication of the Fortis railcar will complete in FY 2026.

Strategic Goal Measure: Commence full-scale physical accident testing of a rail-sized SNF transportation cask in FY 2024.

- Commence full-scale physical accident testing of a rail-sized SNF transportation cask in FY 2027-2031.

Strategic Goal Measure: Continue working with State and Tribal partners to address outstanding operational and policy questions related to future DOE large-scale transport of commercial spent nuclear fuel.

- NE-82 holds 5 cooperative agreements with States and Tribes to support staff to regional and Tribal radioactive materials committees and fund member participation in engagements regarding spent nuclear fuel. Engagements include DOE events and other technical conferences and meetings. NE engages largely with States and Tribes through the DOE National Transportation Stakeholders Forum (NTSF) which brings together States, Tribes, and DOE in annual meetings, webinars, and ad hoc working groups. NE-82 also holds semi-annual Transportation Core Group meetings with key State and Tribal representatives from the 5 cooperative agreements in workshop style meetings to discuss NE-8 program plans and updates. State and Tribal partners are also invited to relevant power plant site evaluations, including the North Anna Nuclear Generating Plant in 2024. DOE also accepts invitations to speak at local citizen advisory panel meetings to discuss operational plans and take questions from local community members.

Strategic Goal Measure: Continue ongoing research and development on nuclear waste storage and disposal including analysis and monitoring of the high-burnup fuel storage test; testing salt deposition and corrosion of stainless-steel canisters; and developing test plans for evaluating characteristics of accident tolerant and advanced reactor fuels in storage, transportation, and disposal.

- The Office of Nuclear Energy's Office of Spent Fuel and High-Level Waste Disposition is continuing its ongoing research and development on multiple technical issues related to spent nuclear fuel storage and disposal. Testing of salt deposition and corrosion of storage canisters was completed at the end of FY24, and analysis is in progress. Evaluations of accident tolerant and advanced reactor spent nuclear fuel forms were completed in FY24 for three leading new reactor designs. Additional designs may be analyzed if

needed in the future. In disposal, a long-term large-scale heated canister test known as “Hot Bent” continues in partnership with Nagra of Switzerland and other international partners at the Grimsel Test Site, an underground research laboratory in Switzerland.

Goal 3: Advance Science Discovery and National Laboratory Innovation

Strategic Objective 10. Advance basic scientific understanding and identify new methods and tools to further discovery

Strategic Goal Measure: FY 2022–2026, advance understanding of matter and energy at the electronic, atomic, and molecular levels.

- Published the world's most precise measurement of the lifetime of the free neutron. A paper reporting the measurement of the neutron lifetime was submitted for publication to Physical Review C on September 6, is under referee review, and is available to the public on the archive at https://arxiv.org/abs/2409.05560. The reported uncertainty on the neutron lifetime is less than 0.30 seconds.
- An international team led by Lawrence Berkeley National Laboratory has set the stage to expand the periodic table of elements. Using a particle accelerator with beams of titanium ions and a plutonium target, the researchers produced isotopes of the element livermorium (Lv), which has 116 protons, in only 22 days, a rate that suggests the beginning of a new chapter for superheavy elements, putting element 120 within reach. Discovery of element 120 would test the number of protons that can bind in the atomic nucleus. As the first element in row 8 of the periodic table, it may open the door to unforeseen innovation as new chemical properties are revealed.

Strategic Goal Measure: FY 2022–2026, advance the reaches of science and engineering through unprecedented computing capabilities at the intersection of exascale simulations, massive scientific data, and scientific machine learning.

- The SC portion of the Exascale Computing Project (ECP) was completed on time and under budget after delivering on all of Department's promises and meeting or exceeding all the technical milestones. These efforts have delivered world leading capabilities for advanced simulation, big data, and artificial intelligence (AI).

Strategic Goal Measure: FY 2022–2026, conduct R&D to increase the availability of critical isotopes in short supply for medical, national security, industrial, and research applications.

- To mitigate risks in foreign supply chains and to meet domestic and global demand for its use in medicine, oil and gas production, and quantum computing research, Ba-133 production has been tripled, compared to the previous campaign, following irradiation of three targets in HFIR for seven cycles. The material is now available for processing/dispensing based on customer demand.

Strategic Goal Measure: FY 2022–2026, DOE national scientific user facilities shall annually be available to users at least 85% of their scheduled operating time.

- In FY 2024, all SC programs stewarding scientific user facilities met the annual target of providing at least 85% of their scheduling operating time to users. Results for the year are: Advanced Scientific Computing Research – 99.6%, Basic Energy Sciences – 88%, Fusion Energy Sciences –104%, High Energy Physics, 97%, Nuclear Physics –114%, and Accelerator R&D and Production –121%.

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Strategic Goal Measure: FY 2022–2026, promote co-design partnerships to seamlessly create large-scale "ecosystems" of AI/ML-enabled facilities, self-driving experiments, infrastructures, and technologies that will transform science and energy research.

- A collaboration between DOE scientific user facilities led to the development of a software toolkit for AI-driven autonomous high-resolution scanning microscopy that demonstrates a greater than 70 percent reduction in the data and dose required to yield a representative scanning X-ray microscopy image. The new toolkit, which incorporates AI and edge computing at the beamline, gives users the ability to make smarter scans focused on areas of interest in a sample, mitigating some of the challenges that are expected due to forthcoming upgrades at DOE user facilities.

Strategic Goal Measure: FY 2022–2026, increase the use of persistent identifiers (PIDs) to make research objects more findable, accessible, interoperable, and reusable (FAIR) and to make AI technologies more transparent, reproducible, privacy-preserving, and trustworthy.

- In FY24, DOE assigned persistent identifiers (PIDs) to 300,000 datasets, 8,000 technical reports and conference materials, 400 software packages, and 400 user facility awards to advance open science and FAIR principles. DOE developed PID policies to meet expectations of National Security Presidential Memo 33 and the 2022 OSTP Public Access Memo and built on its federal leadership in the adoption and use of PIDs through the US Government ORCID Consortium and its DOE and interagency digital object identifier (DOI) services.

Strategic Goal Measure: FY 2022–2026, advance the reaches of science and engineering through unprecedented computing capabilities at the intersection of exascale simulations, massive scientific data, and scientific machine learning.

- The Office of Defense Programs' Advanced Simulation and Computing (ASC) program successfully deployed the El Capitan system, NNSA's first exascale computing platform, and procured AI-optimized platforms for NNSA labs to support increased scientific

machine learning research and evaluation activities.

Strategic Goal Measure: FY 2022–2026, provide the theoretical and experimental knowledge and expertise needed to maintain confidence in the nuclear stockpile in the absence of underground nuclear explosive testing.

- The NNSA ICF Facilities Operation program maintains confidence in the nuclear stockpile through its target platform-development activities. A Weapons Survivability experiment performed at the NIF successfully demonstrated a new measurement capability for sample response to neutron environments. Additionally, background data was recorded on neutron-generated electromagnetic pulse effects in the NIF environment. A second neutron-effects experiment conducted by the Air Force Institute of Technology (AFIT), in collaboration with the NIF Materials and Radiation Effects (MRE) program, provided a scientific basis for damage assessment of technology components subject to unique radiation environments. A third high-yield survivability shot was conducted at NIF which was a joint effort between LLNL's ICF and NNSA programs and a Survivability & Effects team from Sandia National Laboratories in New Mexico. Some of the measured signals were stronger than expected, indicating a regime of neutron-induced radiation effects to explore further

Strategic Goal Measure: FY 2022–2026, access weapons-relevant physics regimes with experimental and simulation capability to better understand controlled thermonuclear fusion in support of stockpile science.

- In FY24 the Inertial Confinement Fusion (ICF) program advanced fusion experiment designs for the study of weapons physics, including the ignition experiments at the National Ignition Facility that generated a record fusion yield of 5.2MJ in February of 2024. The ability to generate multi-megajoule yields at the NIF allows researchers to study the details of a burning fusion plasma and provides critical knowledge of material properties and constraining data for simulations that support stockpile science. Yield from these thermonuclear fusion experiments is being used to investigate survivability of warhead materials and components, and additional experimental studies that require fusion yield products to address unresolved stockpile questions are in development.

Strategic Goal Measure: FY 2022–2026, conduct R&D to develop the technologies and their associated industrial bases needed to enable transformative advances in accelerator technology necessary for progress in basic science and applied R&D.

- NNSA conducts R&D to develop accelerator technology that supports the stockpile in several ways: (1) generating stockpile-relevant environments to qualify materials, components, systems, and hardened electronics in hostile environments; (2) providing static and dynamic material information for weapon assemblies and components that can inform predictive capabilities; and (3) exploring and implementing new options for the stockpile as external threats evolve. Advances in accelerator technology are essential to the ability to probe the characteristics and performance of materials at weapons-relevant conditions. In FY24, Arthur, the first hydrotest of the Excalibur series, was conducted at DARHT. This hydrotest included the highest number of diagnostic channels ever captured at

DARHT. The Pu@pRad vessel team successfully executed the 125% High Explosive (HE) overpressure test for the Inner Plutonium Confinement Vessel (IPCV). The team also fielded a test to assess the HE configuration that will be used in the first series of plutonium experiments. These tests represent a major milestone for the Pu@pRad project.

Strategic Goal Measure: Complete the construction of the Advanced Manufacturing Collaborative Facility by FY 2024.

- On track to complete permanent enclosure in Calendar Year 2024 as planned. Facility is 85% complete as of September 2024. Hurricane Helene induced minor progress delay, but the project is still on schedule to achieve CD-4 ahead of the June 30, 2025, baseline date.

Basic Energy Sciences

Program	Basic Energy Sciences				
Performance Goal (Measure)	**BES Research** - Conduct discovery-focused research to increase our understanding of matter, materials and their properties				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	Determine how defects affect the stability of four (4) classes of energy storage materials and their ability to sustain fast ion transport for multiply charged ions (e.g., Mg+2).	Virtually design and screen >1000 molecules for flow batteries; perform follow-on chemical synthesis and electrochemical characterization of 50 candidate molecules with potential for high energy density.	Investigate at least 50 electrolyte systems (combinations of solvent(s) plus salt) for beyond Li-ion batteries where associated molecular data will be disseminated through the Materials Project.	Establish design principles, synthesize and integrate components, and evaluate the performance of 4 photochemical architectures that incorporate a light absorber and a multi-catalyst cascade to achieve CO2 reduction to carbon-based fuels.	Identify at least 10 factors that limit or could improve performance of recently established photochemical carbon dioxide reduction architectures and address each issue by developing and implementing an improved component or design concept.
Result	**Met**	**Met**	**Met**	**Met**	**Met**
Endpoint Target	Understand, predict, and ultimately control matter and energy at the electronic, atomic, and molecular levels				
Commentary on 2024 Results (Action Plan if Not Met)	Target Met. LiSA and CHASE successfully identified and examined 11 factors that could limit or improve the performance of recently established photochemical carbon dioxide reduction architectures. LiSA examined 5 factors that impact architecture durability, system efficiency, or fuel product distribution. Their results highlight the benefit of a co-design strategy by revealing that enhanced performance requires modification of multiple system elements rather than independent optimization of individual components. CHASE addressed 6 factors to improve the performance of hybrid semiconductor-material photoelectrodes. Particularly promising outcomes were achieved developing new approaches to generate molecular hydrogen/electron donors (known as organic hydride donors) at the illuminated semiconductor interfaces of their Decoupled Architecture.				

Documentation, Limitations, Methodology, Validation, and Verification	Projects in the DOE Fuels from Sunlight Energy Innovation Hub program - the Liquid Sunlight Alliance (LiSA) and the Center for Hybrid Approaches in Solar Energy to Liquid Fuels (CHASE) - are responsible for achieving this performance goal. Performance against milestones is evaluated by annual peer reviews and monitored by quarterly progress reports. Performance is evaluated by standard Office of Science peer review criteria and monitored by quarterly progress reports. Documentation on the peer reviews and quarterly progress reports resides in files in the BES program office.

Biological and Environmental Research

Program	Biological and Environmental Research				
Performance Goal (Measure)	**BER Predictive Understanding** - Advance an iterative systems biology approach to the understanding and manipulation of plant and microbial genomes as a basis for biofuels development and predictive knowledge of carbon and nutrient cycling in the environment.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	Report on genomic science-based advances and testing of new plant feedstocks for bioenergy purposes.	Develop new omics-based techniques to understand microbiome function in environmental samples.	Develop new technologies for assessing microbial ecological processes in environmental samples.	Report on the development of genomic approaches to securely design organisms with targeted beneficial functions for bioenergy and bioeconomy applications.	Report on approaches to assemble a centralized microbiome data collection to understand the functioning of microbiomes relevant to BER's bioenergy and environmental research goals.
Result	**Met**	**Met**	**Met**	**Met**	**Met**
Endpoint Target	BER will advance understanding of the operating principles and functional properties of plants, microbes, and complex biological communities relevant to DOE missions in energy and the environment. Deciphering the genomic blueprint of organisms and determining how this information is translated to integrated biological systems permits predictive modeling of bioprocesses and enables targeted redesign of plants and microbes. BER research will address fundamental knowledge gaps and provide foundational systems biology information necessary to advance development of biotechnology and predict impacts of changing environmental conditions on carbon cycling and other biogeochemical processes.				
Commentary on 2024 Results (Action Plan if Not Met)	Target met: New capabilities developed within the NMDC are facilitating the broader collection and standardization of environmental microbiome data and enabling a broader microbiome research community.				
Documentation, Limitations, Methodology, Validation, and Verification	Quarterly - Emails from the designated performers reporting the research results (per documented control process). EOY - Emails reporting the results and publication/availability of the results (per documented control process). Reports available at: https://genomicscience.energy.gov/doe-performance-metrics/				

Program	Biological and Environmental Research				
Performance Goal (Measure)	**BER Earth System Model** - Develop a coupled earth system model with fully interactive water, carbon and sulfur cycles, as well as dynamic vegetation to enable simulations of earth system responses to change.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	Demonstrate improved DOE-E3SM simulation of mesoscale convective systems over North America.	Demonstrate improved simulation of the complex dynamics of North American coastal systems by comparing models to data.	Demonstrate feasibility of global variable resolution modeling with regional refinement over the Arctic and Antarctic.	Demonstrate improved capability using a hierarchy of models including E3SM on simulating extreme events and their impacts in the U.S. west coast.	Demonstrate kilometer-scale modeling capabilities for simulating the water cycle in the U.S.
Result	**Met**	**Met**	**Met**	**Met**	**Met**
Endpoint Target	BER supports the leading U.S. high-resolution earth system model and addresses two of the most critical areas of uncertainty in contemporary earth system science—the impacts of clouds and aerosols that combine with biogeochemical and cryospheric processes. Delivery of improved scientific data and models (with quantified uncertainties) about the earth's atmospheric, oceanic, cryospheric, and terrestrial system to more accurately predict the earth system responses to change. The information is essential to plan for future national security, energy and infrastructure needs, water resources, and land use. DOE will continue to advance the science necessary to further develop predictive earth system models at the regional spatial scale and multiple time scales, involving close coordination with the U.S. and international science community.				
Commentary on 2024 Results (Action Plan if Not Met)	All targets met. Reports provided as part of the overall performance metric for FY2024. Km-scale modeling capabilities have been developed and demonstrated in simulating the terrestrial water cycle, water cycle extremes in the US, regional to urban integrated pluvial and fluvial flooding, as well as the US water cycle in global kilometer-scale simulations produced on an exascale computer. All km-scale modeling capabilities have been evaluated against observations and some are compared with the lower resolution model results, the advantage of numerous km-scale modeling capabilities have been documented.				

Fusion Energy Sciences

Program	Fusion Energy Sciences				
Performance Goal (Measure)	**FES Facility Based Experiments** - Experiments conducted on major fusion facilities [DIII-D National Fusion Facility (DIII-D) and National Spherical Torus Experiment Upgrade (NSTX)-U] leading toward predictive capability for burning plasmas and configuration optimization				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	Accumulation of impurities, ranging from light ions (helium ash) to high-Z (such as tungsten) can adversely impact the reactivity of the fusion core through fuel dilution and excessive radiation. To inform operation of ITER and beyond, transport of impurities from the divertor to the core will be studied, particularly as parameters that are expected to impact	Conduct research to assess the capability of the shattered pellet injection (SPI) system for use as the ITER baseline disruption mitigation system technology.	Assess the feasibility of using enhanced confinement of plasma regimes where edge localized modes do not form (non-ELMing plasma regimes) for future burning plasma facilities.	Evaluate the potential of shaped tokamak plasmas with negative triangularity to serve as an operational scenario for a power plant.	Assess the feasibility of using lower hybrid current drive to sustain steady-state advanced tokamak scenarios.
Result	**Met**	**Met**	**Met**	**Met**	**Met**
Endpoint Target	Magnetic fields are the principal means of confining the hot ionized gas of a plasma long enough to make practical fusion energy. The detailed shape of these magnetic containers leads to many variations in how the plasma pressure is sustained within the magnetic bottle and the degree of control that experimenters can exercise over the plasma stability. These factors, in turn, influence the functional and economic credibility of the eventual realization of a fusion power reactor. The key to their success is a detailed physics understanding of the confinement characteristics of the plasmas in these magnetic configurations. The major fusion facilities can produce plasmas that provide a wide range of magnetic fields, plasma currents, and plasma shapes. By using a variety of plasma control tools, appropriate materials, and having the diagnostics needed to measure critical physics parameters, scientists will be able to develop optimum scenarios for achieving high performance plasmas in future burning plasma devices and, ultimately, in power plants.				
Commentary on 2024 Results (Action Plan if Not Met)	The development of a high field side lower hybrid current drive (HFS LHCD) system for the DIII-D tokamak has been a collaborative effort between DIII-D, MIT and PPPL. The system is designed to inject 1 MW of 4.6 GHz power into DIII-D plasmas. Completion of the present Milestone lays the groundwork to pursue validation experiments in FY 2025, including system operation up to 1 MW for one second. In support of future experiments, using a HFS reflectometer, the high field side (HFS) scrape-off layer (SOL) plasma has been characterized for a wide range of scenarios. As expected, the HFS SOL density profile is steeper than low field side SOL density profile outside the plasma and fluctuations from edge localized modes and turbulence are greatly attenuated depending on magnetic equilibrium. Furthermore, a machine learning method, XGBoost, has been trained on the HFS SOL density database and predicts the HFS SOL density profile with reasonable accuracy over a wide range of plasmas. This represents a significant first for RF coupling analysis as coupling can be accurately predicted based on a finite set of plasma parameters. Simulation also indicates that HFS SOL conditions in typical DIII-D high performance discharges are compatible with efficient HFS LHCD coupling and coupling remains stable throughout an ELM perturbation.				

Documentation, Limitations, Methodology, Validation, and Verification	Supporting data are contained in progress reports maintained by the FES program office.

Program	Fusion Energy Sciences				
Performance Goal (Measure)	**FES Theory and Simulation** - Performance of simulations with high physics fidelity codes to address and resolve critical challenges in the plasma science of magnetic confinement				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	A Vertical Displacement Event (VDE) is an off-normal occurrence in a tokamak in which position control of the discharge is lost, and the tokamak plasma moves rapidly upward or downward until it makes contact with the vacuum vessel. The discharge current in ITER will be up to 15 MA. When a plasma with this current makes contact with the vessel, it will induce large currents into the metallic vessel, and these currents will cause large forces.	Simulations will be performed with a suite of codes including kinetic and magnetohydrodynamic models, to investigate the generation of the seed runaway electrons and their subsequent acceleration.	Energetic particle (EP) confinement properties of ITER operation scenarios will be comprehensively assessed using global gyrokinetic codes, hybrid magnetohydrodynamics (MHD) codes, and reduced EP transport models.	The differences among multiple three-dimensional magnetohydrodynamic equilibrium codes having complementary capabilities will be assessed and used to investigate the 3D nonlinear stability of equilibrium states identified in strongly shaped stellarators.	Develop a Machine Learning/Artificial Intelligence toolkit to enable reconstruction of equilibria from experimental diagnostic data collected during discharges.
Result	**Met**	**Met**	**Met**	**Met**	**Met**
Endpoint Target	Advanced simulations based on high physics fidelity models offer the promise of advancing scientific discovery in the plasma science of magnetic fusion by exploiting the Office of Science high performance computing resources and associated advances in computational science. These simulations can address the multiphysics and multiscale challenges of the burning plasma state and contribute to the FES goal of advancing the fundamental science of magnetically confined plasmas to develop the predictive capability needed for a sustainable fusion energy source.				
Commentary on 2024 Results (Action Plan if Not Met)	Target met. Researchers successfully utilized the GPU acceleration and AI/ML techniques on the real-time analysis of a 3D filament model. Researchers delivered a final report detailing the targets of each quarter and containing a final summary of their efforts.				

Documentation, Limitations, Methodology, Validation, and Verification	Supporting data are contained in progress reports maintained by the FES program office.

High Energy Physics

Program	High Energy Physics				
Performance Goal (Measure)	**HEP Neutrino Model** - Carry out series of experiments to test the standard 3-neutrino model of mixing				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	The ICARUS neutrino detector will take its first data in the Booster neutrino beam at Fermilab as part of the short baseline neutrino program.	The ICARUS Detector will take its first data in the Booster neutrino beam at Fermilab as part of the short baseline neutrino program. ICARUS and the Short Baseline Detector (SBND) are designed to definitively confirm (or rule out) hints of short-distance accelerator neutrino oscillations reported by some earlier experiments.	New results from the NOvA experiment will address the current apparent tension with the Japanese T2K experiment neutrino oscillation results. The final major results from the MicroBooNE and Minerva experiments will be presented.	Begin commissioning of the Short Baseline Neutrino Detector.	Begin taking data with the Short Baseline Neutrino Detector and use it combined with ICARUS to definitively confirm (or rule out) hints of short-distance accelerator neutrino oscillations reported by some earlier experiments.
Result	**Not Met**	**Met**	**Met**	**Met**	**Met**
Endpoint Target	Similar to quarks, the mixing between neutrinos is postulated to be described by a unitary matrix. Measuring the independent parameters of this matrix in different ways and with adequate precision will demonstrate whether this model of neutrinos is correct. Such a model is needed to correctly extract evidence for CP violation in the neutrino sector.				
Commentary on 2024 Results (Action Plan if Not Met)	Target met. The Short Baseline Neutrino Detector successfully took data in June and July 2004. The analysis in conjunction with ICARUS has not yet been started.				
Documentation, Limitations, Methodology, Validation, and Verification	QTR: progress reports The supporting documentation resides in the files of the HEP Office.				

Strategic Objective 11. Lead globally in key innovation and national security areas including clean energy technologies, artificial intelligence, quantum information sciences, microelectronics, advanced computing, particle accelerator technologies, and next generation biology and biosecurity

Strategic Goal Measure: FY 2022-2026, ensure that directed fundamental research focuses on the interface between basic and applied science to contribute to the goal of deploying emerging clean energy technologies at scale.

- In spring 2024, the Fusion Energy Sciences program completed negotiations with 8 private sector teams for the Fusion Milestone program to deliver, within 18 months, fusion pilot plant preconceptual designs and technology road maps. These 8 teams represent a diverse array of approaches to fusion confinement – 2 tokamaks, 2 stellarators, 2 inertial fusion, one mirror, and one Z-pinch.

Strategic Goal Measure: FY 2022-2026, continue to provide capabilities at user facilities that serve the broad clean energy research and development communities, ensuring that these capabilities evolve to tackle the most challenging research required for barriers identified in the applied research and demonstration activities.

- The Advanced Photon Source (APS) Upgrade project completed installation of the upgraded electron storage ring and achieved first light in June 2024, delivering X-rays to the resonant inelastic X-ray scattering beamline, one of multiple beamlines upgraded as part of the project. The milestone follows nearly a year-long installation and commissioning of the new storage ring. Following this milestone, APS resumed its user program, giving the scientific community its first opportunities to utilize the world's brightest hard X-ray light source for scientific discovery. When fully commissioned, the upgraded APS will be the world's brightest hard X-ray light source, offering a nearly 500 times increase in brightness relative to its predecessor, with dozens of new and updated beamlines ready to take advantage of the enhanced X-ray beam.

Strategic Goal Measure: FY 2022–2026, advance foundational research to make AI technologies more transparent, reproducible, privacy-preserving, and trustworthy, and establish benchmarks for determining when an AI technology is sufficiently robust for use in mission-critical DOE applications.

- In FY 2024, ASCR identified two new fundable efforts for research in privacy preserving technologies to advance the goals of the Department's Artificial Intelligence initiative from proposals submitted to the FOA on "Advancements in Artificial Intelligence for Science".

Strategic Goal Measure: FY 2022 – 2026, advance fundamental understanding of genome-scale design principles and enable translation of that knowledge into engineered cellular functions in microorganisms, plants, and microbiomes.

- The National Microbiome Data Collaborative (NMDC), supported by the DOE Office of Science, developed a mobile app for sample description and geo-location information to aid data entry for environmental microbiome samples collected in the field, updated data submission portals and schema for microbiome data input and made improvements to bioinformatics capabilities within the NMDC platform. These developments, along with outreach efforts to the microbiome research community have positioned the NMDC as an increasingly essential tool for the broader microbiome research community world-wide.

Strategic Goal Measure: FY 2022–2026, develop and field AI/ML technologies at National Laboratories, plants, and sites within the nuclear security enterprise to support stockpile stewardship.

- The Office of Defense Programs' Advanced Simulation and Computing (ASC) program successfully procured AI-optimized platforms for NNSA labs to support increased scientific machine learning research and evaluation activities for the stockpile stewardship mission.

Strategic Goal Measure: FY 2023-2026, deliver the NNSA exascale system and pursue new validated integrated design codes to provide critical simulation capabilities for informing decision-making related to the sustainment of the nuclear stockpile.

- The Office of Defense Programs' ASC program successfully deployed the El Capitan system, NNSA's first exascale computing platform, at LLNL. The trilab integrated code teams prepared key weapons codes to run on El Capitan after it transitions to classified service in mid-FY2025.

Accelerator R&D and Production

Program	Accelerator R&D and Production				
Performance Goal (Measure)	**ARDAP Research** - ensure a robust pipeline of next-generation AS&T to support physical science research, while providing technology advances and industrial strength that position the US to lead the world for decades to come.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	Identify at least three new fundable research efforts in superconducting accelerators, beam physics, particle sources, radiofrequency power sources, laser technology, and advanced materials that enable scientific research and strengthen U.S. industry.	Identify at least two new public-private partnerships to develop suppliers of critical accelerator technology including superconducting accelerator components, high power RF and laser components, and advanced materials.	Identify at least three new fundable cross-cutting accelerator research efforts and one new public-private partnership to develop and strengthen domestic suppliers of superconducting components, laser components, particle sources, and advanced materials.
Result	N/A	N/A	**Met**	**Met**	**Met**
Endpoint Target	Maintain world leadership in accelerator-based physical sciences research through continuous advance of accelerator science and technology, robust technology transfer, and workforce development.				
Commentary on 2024 Results (Action Plan if Not Met)	Target met. Thirteen new cross-cutting R&D efforts were funded in advanced laser technology, beam dynamics, machine learning, photocathodes, and superconducting accelerators. One new public-private partnership was funded (between General Atomics and ANL and SLAC) to jointly develop superconducting undulator technology.				
Documentation, Limitations, Methodology, Validation, and Verification	Performance is evaluated by standard Office of Science peer review criteria and monitored by quarterly progress reports. Documentation on the peer reviews and quarterly progress reports resides in files in the ARDAP program office.				

Advanced Scientific Computing Research

Program	Advanced Scientific Computing Research				
Performance Goal (Measure)	**ASCR Research** - Discovery of new applied mathematics and computer science tools and methods that enable DOE applications to deliver scientific and engineering insights with a significantly higher degree of fidelity and predictive power				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	Recompete the SciDAC Institutes and identify at least one fundable team.	Identify at least one new fundable effort to advance an integrated data infrastructure for scientific discovery.	Deliver at least one DOE application with performance at the exascale (at least 5 times the performance on Summit).	Identify at least one new fundable effort with the potential to advance the goals of the Department's Energy Earthshots.	Identify at least one new fundable effort for research in privacy preserving technologies to advance the goals of the Department's Artificial Intelligence initiative.
Result	**Met**	**Met**	**Met**	**Met**	**Met**
Endpoint Target	Develop and deploy high-performance computing hardware and software systems through exascale platforms				
Commentary on 2024 Results (Action Plan if Not Met)	Target Met. Research efforts in privacy preserving technologies are expected to result in the discovery of new applied mathematics and computer science tools and methods that enable DOE applications to deliver scientific and engineering insights with a significantly higher degree of fidelity and predictive power.				
Documentation, Limitations, Methodology, Validation, and Verification	Quarterly and EOY: Research effort tracked through annual progress reports and quarterly program manager review of project accomplishments. Documents are stored in ASCR files. New awards will be documented through the Portfolio Analysis and Management System (PAMS).				

Bioenergy Technologies

Program	Bioenergy Technologies				
Performance Goal (Measure)	**Co-Products** - Develop new materials from biomass that have better performance than petroleum-derived material properties.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	1	6	10	12
Result	N/A	**Exceeded** - 5	**Met** - 6	**Met** - 10	**Met** - 12

Endpoint Target	Between 6 and 40 new materials by 2025 (depending on appropriations)
Commentary on 2024 Results (Action Plan if Not Met)	Twelve new bio-derived material formulations were synthesized, characterized, and tested. Several of these compounds showed improved properties compared to the fossil-based incumbent chemical. These include lower volatility when used as a plasticizer for PVC and enhanced recyclability when used as nylon 6, 6 replacements for textiles and other applications. These results and several others have been documented in four publications that are in preparation and new partnerships with major chemical producers.
Documentation, Limitations, Methodology, Validation, and Verification	Synthesize, characterize, and test new bio-derived material formulations across a range of polymer applications at least at the gram scale. Research will show improvements in new materials that exceed relevant petroleum-derived material properties by at least 10% for industry to consider the materials "performance advantaged" and that are within 25% of the cost of the comparable petroleum-derived material in this discovery phase. Performance advantaged bioproducts have enhanced properties versus traditional, commercially available materials which could include improved recyclability.

Transformer Resilience and Advanced Components

Program	Transformer Resilience and Advanced Components				
Performance Goal (Measure)	**Transformer Resilience and Advanced Components** - Develop tools and technologies that enable the next-generation of grid hardware to be more adaptive, more flexible, self-healing, resilient to all-hazards, reliable, and cost-effective compared to technologies available today, and maximizes the value and lifetimes of current grid components.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	Complete evaluation of 1 new material for suitability in high power converters or advanced transformers	Complete evaluation of advanced power electronics building blocks for future sub-distribution scale substation applications	Test the prototype of a large power transformer with variable impedance of ±5% showing increased adaptability.	Develop infrastructure and testing capabilities to support TRAC research and validation activities from the component to subsystems level.	Develop and Demonstrate Hardware-in-Loop (HIL) Framework for Futuristic Grid Architectures to support the Solid State Power Substation (SSPS) nodes and hubs in the distribution system.
Result	**Met**	**Met**	**Met**	**Met**	**Met**
Endpoint Target	By the end of FY 2030, next-generation transformers and converters will be developed that can be utilized in more than 80% of substations cost-effectively while increasing the transformer and converter flexibility and resiliency by 50%.				
Commentary on 2024 Results (Action Plan if Not Met)	The SSPS architecture was a validated and demonstrated for a voltage regulation case along the feeder. The need for coordination and effectiveness of the approach was quantified.				

Documentation, Limitations, Methodology, Validation, and Verification	Project validation and documentation were carried out through presentations to utilities for potential field demonstrations, industry and vendor engagement through one-on-one meetings, peer review conferences, and publications. A publication appeared in Energies, a peer-reviewed, open access journal of related scientific research and technology development. Additionally, a patent was issued from this project. https://www.mdpi.com/1996-1073/16/13/4842

Energy Delivery Grid Operations Technology

Program	Energy Delivery Grid Operations Technology				
Performance Goal (Measure)	**Energy Delivery Grid Operations Technology** - Develop and implement an integrated system of dynamic modeling capabilities that will assist in identification and evaluation of approaches to strengthening the bulk electrical system that supplies critical infrastructure.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	Confirm North American Energy Resilience Model (NAERM) concept and individual case scenarios for the integration of NAERM platform. This confirmation will be used to validate the NAERM ecosystem integration.	Confirm North American Energy Resilience Model (NAERM) ecosystem integration concept and individual case scenarios for the integration of NAERM platform.	Using NAERM, bring conceptual, structural, and operational features together to do an analysis for assessing the system reliability level.
Result	N/A	N/A	**Met**	**Met**	**Met**
Endpoint Target	By the end of 2030, develop and enhance the portfolio of validated and tested tools that cover multiple infrastructures and features aimed to enhance NAERM capabilities used by government, industry, and academic stakeholders to assess and, in the planning mode, mitigate the impact of infrastructure changes to the electric power system under different events to ensure the reliable operation of the electric power system.				

Commentary on 2024 Results (Action Plan if Not Met)	The capabilities were developed and fully tested, demonstrating their effectiveness. Currently, the team is testing them with selected customers to raise industry awareness of these capabilities.
Documentation, Limitations, Methodology, Validation, and Verification	The data for these two use cases came from 70+ NDA that NAERM has with industry stakeholders. Subject Matter Expert (SME) were used to validate the results. The team is currently working with NERC and NRECA to demonstrate the capability and gain industry trust in the results of the studies.

Applied Grid Transformation Solutions

Program	Applied Grid Transformation Solutions				
Performance Goal (Measure)	**Applied Grid Transformation Solutions** - Rapidly validate and deploy new systems by integrating technology suites in controlled pilot environments to drive new technology adoption.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	N/A	Initiate 2–3 integrated pilots to show how new technologies can help improve stakeholder objectives.	Create a repository of grid test beds in the Nation, to include national labs, academia, and industry.
Result	N/A	N/A	N/A	**Met**	**Met**
Endpoint Target	By 2030, demonstrate how new technology portfolios can improve grid hardware investment metrics (including ratepayer benefits, deployment speed, and payback period) by 15%-30% over baseline technologies.				
Commentary on 2024 Results (Action Plan if Not Met)	A repository of electric grid test beds in the United States, including facilities at national labs, academia, and industry, was created and hosted on OE's website, meeting the FY 2024 target. Due to Paperwork Reduction Act (PRA) constraints, data in the repository was developed by Contractor Subject Matter Experts through use of public information instead of a survey. The U.S. Electric Grid Test Bed Inventory is under continuous development and AGTS will provide opportunities for listed entities/facilities to validate and/or update their information.				
Documentation, Limitations, Methodology, Validation, and Verification	https://www.energy.gov/oe/us-electric-grid-test-bed-inventory				

Strategic Objective 12. Commercialize innovations to improve the lives of Americans and the world

Strategic Goal Measure: FY 2022–2026, facilitate the maturation of technologies that are not yet ready for commercialization and collaborate with other agencies to identify new pathways that will make it easier to commercialize technology.

- The Office of Science implemented a new the Small Business Innovation Research (SBIR) partnering website (sbirpartnering.org) in November 2023 to assist applicants and awardees find partners for technology development and commercialization. In the first 9 months since the launch over 400 small business and 300 partners have signed up to use the site and we have received interest from other Federal agencies.

Strategic Goal Measure: FY 2022–2026, support product fabrication and delivery of critical components through commercialization.

- The U.S. Department of Energy (DOE) Isotope Program and QSA Global Inc. announced a joint product development agreement to initiate domestic production of iridium-192 (Ir-192), a critical isotope for industrial gamma ray radiography. This agreement will lead to the re-establishment of domestic Ir-192 production, thereby mitigating U.S. dependence on foreign sources. Ir-192 serves as a gamma source essential for industrial radiographic non-destructive testing to detect structural damage to metal parts such as castings, forgings, and weld defects. Industrial gamma radiography plays a crucial role in ensuring the quality of manufacturing processes, particularly in sectors such as shipbuilding, auto manufacturing, and aerospace.

Strategic Goal Measure: In 2024, manage existing Bipartisan Infrastructure Law (BIL) Technology Commercialization Fund (TCF) programs and projects; continue to launch new funding programs and projects through BIL and Inflation Reduction Act (IRA) TCF with the goals of cultivating a broader innovation ecosystem around the BIL provision activities to enable faster replication and scaling of demonstration projects and enabling industrial decarbonization technology commercialization.

- Technology Commercialization Fund (TCF): In 2024, OTT worked with its partners (TCF BIL-participating offices OCED, FECM, EERE, MESC, and CESER) to continue management of BIL TCF projects and programs. These included:
    - With FECM and OCED, projects related to the FY23 Carbon Dioxide Removal Measurement, Reporting, and Verification Program, which are working to accelerate commercializing carbon dioxide removal technologies, including direct air capture.
    - With OCED, projects related to the FY Collaborative Alignment for Critical Technology Industries lab call, which are bringing together stakeholders across the hydrogen and long duration energy storage industries to develop collaborative recommendations and best practices for resolving broad challenges.
    - With OCED and EERE, the DOE Vouchers program, which provides in-kind commercialization support to

organizations that have a role in bringing innovative energy technologies to market nation-wide.
    - With OCED and EERE, the Manufacture of Advanced Key Energy Infrastructure Technologies (MAKE IT) Prize, which aims to catalyze domestic manufacturing of critical clean energy technology components.
- OTT and its partners also launched new programs and projects through BIL and IRA TCF, including:
    - With OCED and EERE, the Solutions for Lasting, Viable Energy Infrastructure Technologies Prize, which empowers communities to solve their energy-related challenges, enabling innovative solutions for local energy-related challenges.
    - With OCED, the Collaborative Alignment for Critical Technology Industries - Industrial Decarbonization Lab Call, which will help address adoption challenges preventing later stage commercialization, demonstration, and deployment of industrial decarbonization technologies.
- $150M out of $174M of the FY22-24 TCF BIL contributions has been obligated.

Strategic Goal Measure: In 2024, launch and implement actions to support regional

- Energy Program for Innovation Clusters (EPIC): EPIC provides funding to incubators to help energy startups achieve commercial success by building a localized ecosystem of resources and developing training programs to navigate and overcome barriers to market entry. Several of the EPIC incubator accelerator programs are partnering with DOE National Laboratories. These partnership activities include forming companies, facilitating contractual agreements such as CRADAs, and helping companies access national lab services in the regions that both the labs and EPIC winners are co-located and servicing throughout the United States. Other resources that these incubators develop in their localized ecosystem include potential customers, investors, manufacturing and supply chain partners, grant writing assistance, prototyping facilities, and others. In FY24, 23 incubators and 10 startups across nearly 20 states were awarded to boost regional energy innovation and jobs.

Strategic Goal Measure: By 2025, fully implement the first DOE-wide Partnership Intermediary Agreement (PIA) pilot involving participation from at least 5 program offices and assess outcomes and lessons learned from the pilot.

- Partnership Intermediary Agreement: The Pilot, which began in April 2023, now includes a total of 46 Partnership Intermediary Project Orders (PPOs); 38 are active or complete with an aggregate funding level of $238M, and 8 are in development with an estimated funding level of $105M.
- Key successes for the PIA Pilot in FY24 include significant engagement from non-traditional entity applicants and geographic diversity across the U.S. More than 2,000 applications were received for the 38 projects active or completed in FY24, with 58% reporting no prior DOE engagement and applicants representing all fifty US states. This combined success was demonstrated with PIA projects across 19 participating program offices (POs), with many leveraging the PIA to support their financial assistance portfolios. The size of the PIA Pilot portfolio increased more than 2.5X from FY23 to FY24, and as a result in August 2024, two additional Partnership Intermediary (PI) organizations signed PIAs with DOE to meet this growing demand.

Isotope R&D and Production (DOE Isotope Program)

Program	Isotope R&D and Production (DOE Isotope Program)				
Performance Goal (Measure)	**Isotope Research and Development** - Increase the availability of critical isotopes for the Nation.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	Enable novel production routes of high priority medical isotopes by obtaining all necessary approvals for commissioning of Low-Energy Medical Cyclotron at BNL.	Establish routine production for cerium-134 at the Isotope Production Facility at LANL as a diagnostic partner to the cancer therapeutic actinium-225.	Triple the production and availability of barium-133 at ORNL to mitigate risks in foreign supply chains and to meet domestic and global demand for its use in medicine, oil and gas production, and quantum computing research.
Result	N/A	N/A	**Not Met**	**Met**	**Met**
Endpoint Target	Isotopes are strategic commodities which play a critical role in the scientific, industrial, medical, and agricultural enterprise of the Nation. In fulfilling its mission, DOE IP supports research into novel technologies for the production and processing of isotopes to support emerging technology, mitigate potential shortages, and enhance U.S. independence of foreign supply.				
Commentary on 2024 Results (Action Plan if Not Met)	Target Met. Ba-133 production has been tripled, compared to the previous campaign, following irradiation of three targets in HFIR for seven cycles. The material is now available for processing/dispensing based on customer demand.				
Documentation, Limitations, Methodology, Validation, and Verification	Monthly progress updates provided by Oak Ridge National Laboratory. Documentation resides in the Office of Isotope R&D and Production files.				

EnergyTech University Prize (EnergyTech UP)

Program	EnergyTech University Prize (EnergyTech UP)				
Performance Goal (Measure)	**EnergyTech University Prize (EnergyTech UP)** - Students engaged in business plan competition				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	N/A	N/A	> 650 Students
Result	N/A	N/A	N/A	N/A	**Met** - 791
Endpoint Target	650 students engaged in business plan competition on annual basis.				
Commentary on 2024 Results (Action Plan if Not Met)	Competition concluded mid Feb 2024. 791 students participated in FY24.				
Documentation, Limitations, Methodology, Validation, and Verification	National laboratory administering prize competition reports out at the conclusion of each phase. Anticipated milestone timeline: Quarter 1 FY 2024 – FY 2024 Energy Technology University Prize Competition announced to public. Quarter 2 FY 2024 – Application period closed. Regional competitions complete. Quarter 3 FY 2024 – National competition complete. Quarter 4 FY 2024 – Total number of students engaged in competition reported.				

Energy Program for Innovation Clusters (EPIC)

Program	Energy Program for Innovation Clusters (EPIC)				
Performance Goal (Measure)	**Energy Program for Innovation Clusters (EPIC)** - Incubators developing new programs.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	N/A	N/A	= 20 Incubators
Result	N/A	N/A	N/A	N/A	**Met** - 23
Endpoint Target	20 incubators supported on an annual basis.				

Commentary on 2024 Results (Action Plan if Not Met)	Additional collaborating office funds provided for 3 bonus prize winners, bringing total incubators developing new programs to 23.
Documentation, Limitations, Methodology, Validation, and Verification	National laboratory administering prize reports out at the conclusion of each phase. Anticipated milestone timeline: Quarter 1 FY 2024 – Design It phase launched. Quarter 2 FY 2024 – Design It phase submission deadline, winners announced. Move It phase launched. Quarter 3 FY 2024 – Move It phase submission deadline, winners announced. Quarter 4 FY 2024 – Prove It phase submission deadline.

Goal 4: Ensure America's Nuclear Security by Harnessing Unparalleled Science and Technology Capabilities

Strategic Objective 13. Design, deliver, and maintain a safe, secure, reliable, and effective nuclear stockpile in support of the Nation's integrated deterrent

Strategic Goal Measure: Re-establish strategic material production processes: Restart binary production in FY 2022 to produce qualified binary material by 2024.

- NNSA restored the Vacuum Arc Remelt (VAR) furnace in FY24 and will produce qualified binary ingots by 2026. The Vacuum Induction Melt (VIM)-VAR-VAR is the current baseline process for binary ingot production. The Y-12 National Security Complex worked to fully re-establish the process from 2018 to 2024, overcoming significant legacy equipment and infrastructure challenges. This signifies a monumental step towards re-establishing binary production at Y-12 since the early 2000s. Sustainment and qualification activities are underway; qualified binary ingots will be available in 2026. Further, Test and Demonstration Facility Development VAR furnace is producing binary ingots for supplemental production to support weapons production demand in the near term.

Strategic Goal Measure: Provide safe and secure transport of weapons, components, and special nuclear material: Annually achieve 100 percent safe and secure transport of all weapon and material movements.

- In FY 2024 STA achieved 100 percent safe and secure transport of all weapon and material movements.

Stockpile Management

Program	Stockpile Management				
Performance Goal (Measure)	**Annual Warheads Assessment** - Annual percentage of warheads in the stockpile that are certified safe, secure, reliable, and effective.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	100 % of stockpile certified	100 % of stockpile certified	100 % of stockpile certified	100 % of stockpile certified	100
Result	**Met** - 100	**Met** - 100	**Met** - 100	**Met** - 100	**Met** - 100
Endpoint Target	Annually, conduct 100% of the assessment activities to determine whether warheads in the stockpile are safe, secure, reliable, effective, and available to the President for deployment				
Documentation, Limitations, Methodology, Validation, and Verification	This measure of NNSA's annual assessment activities and results are documented in 1) Annual Assessment Execution Plan; 2) Warhead specific Annual Assessment Reports; 3) Laboratory Directors' and the U.S. Strategic Command (STRATCOM) Commander's Annual Assessment Letters: and 4) Report on Stockpile Assessment (ROSA) letter signed by the U.S. Secretary of Energy and U.S. Secretary of Defense. Certification and surveillance activities are grounded in science-based stockpile stewardship tools and assessments performed across the nuclear security enterprise.				

Production Modernization

Program	Production Modernization				
Performance Goal (Measure)	**Tritium Production** - Cumulative number of Tritium-Producing Burnable Absorber Rods (TPBAR) irradiated in Tennessee Valley Authority reactors to provide the capability of producing new tritium to support national security requirements.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	6,512 TPBARs	8,016 TPBARs	8,416 TPBARs	10,720 TPBARs	12224
Result	**Met** - 6,512	**Exceeded** - 8,848	**Exceeded** - 11,744	**Exceeded** - 12,432	**Exceeded** - 14,112
Endpoint Target	Optimize tritium production for high confidence of producing sufficient tritium in each reactor cycle to meet national security inventory needs.				
Commentary on 2024 Results (Action Plan if Not Met)	An additional 1,680 TPBARs were loaded into WBN2 during FY2024, for a cumulative total of 14,112 TPBARs. No TPBARs were loaded into WBN1 in FY24. The next insertion of TPBARs will be in WBN1 in the first quarter of FY25.				
Documentation, Limitations, Methodology, Validation, and Verification	Milestones supporting the performance measure are documented in the Tritium Sustainment Program plans. Irradiation requirements were validated in a bottom's up review mandated by Congress in FY 2015. Site acceptance reports or other appropriate documentation (if classified, cover pages submitted, including applicable document record numbers and information on how to obtain a copy of the report), weekly site status calls with the Federal Program Manager, end -of -cycle reports submitted by the Tennessee Valley Authority (TVA), Quarterly Project Reviews (attended by TVA), and; Milestone Reporting Tool (MRT) status reports are all used to verify and validate the Program is taking action to meet requirements.				

Program	Production Modernization				
Performance Goal (Measure)	**Modernize Plutonium Infrastructure** - Annual percentage of Plutonium Modernization infrastructure investment milestones completed to re-establish plutonium pit production at the required capacity.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	N/A	90 %	90 %
Result	N/A	N/A	N/A	**Not Met** - 50	**Not Met** - 44
Endpoint Target	Complete Plutonium infrastructure investment required to reach a war reserve pit production rate of 80 pits per year to support production requirements for the nuclear modernization program of record.				
Commentary on 2024 Results (Action Plan if Not Met)	**Action Plan:** LANL is currently developing an updated, more realistic IMS. Infrastructure projects will be re-baselined based on this updated IMS. Program will continue to review project data monthly. Program office has directed LANL to complete risk analysis for all minor construction projects and have included these risks in the program office risk register.				
Documentation, Limitations, Methodology, Validation, and Verification	Section 4219 of the Atomic Energy Defense Act, as amended. Pit Production NNSA Integrated Master Schedule (NIMS) DOE Order 413.3b, Program and Project Management for the Acquisition of Capital Assets Methodology will include ongoing performance tracking of several MIE and MC projects at various sites in support of the Nation's re-establishment of a Plutonium pit production capability against the major program milestones for First Production Unit (FPU) to an 80 ppy capacity. Performance tracking is conducted via ongoing analysis of monthly schedule status submissions from all relevant stakeholders and sites contained in the Pit Production NIMS.				

Infrastructure and Operations

Program	Infrastructure and Operations

Performance Goal (Measure)	**Operations of Facilities** - Enable NNSA missions by providing operational facilities to support nuclear weapon dismantlement, life extension, surveillance, and research and development activities, as measured by percent of scheduled versus planned days mission-critical and mission-dependent facilities are available without missing key deliverables.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	85 % of availability	85 % of availability	85 % of availability	85 % of availability	85 % of availability
Result	**Exceeded** - 98.9	**Exceeded** - 98.6	**Exceeded** - 98.3	**Exceeded** - 97.1	**Exceeded** - 97.9
Endpoint Target	Mission critical and mission dependent facilities are available at least 85% of scheduled days annually.				
Commentary on 2024 Results (Action Plan if Not Met)	Exceeded the target of 85% of facilities available for operations in FY 2024. Mission critical and mission dependent facilities were available 97.9% of the scheduled days. Operations of facilities funding ensures that resources, to include staffing, are prioritized for the NNSA mission critical and dependent facilities. These resources ensure that facilities are available and ready to support the mission.				
Documentation, Limitations, Methodology, Validation, and Verification	Quarterly Facility Availability Reported, by site.				

Secure Transportation Asset

Program	Secure Transportation Asset				
Performance Goal (Measure)	**Safe and Secure Shipments** - Annual percentage of shipments completed safely and securely without compromise/loss of nuclear weapons/components or a release of radioactive material.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	100 % of shipments	100 % of shipments	100 % of shipments	100 % of shipments	100
Result	**Met** - 100	**Met** - 100	**Met** - 100	**Met** - 100	**Met** - 100
Endpoint Target	Annually, ensure that 100% of shipments are completed safely and securely without compromise/loss of nuclear weapons/components or a release of radioactive material.				
Documentation, Limitations, Methodology, Validation, and Verification	Certification from the senior Program Manager for Mission Operations that there are no known internal or external reports of any compromise or loss; absence of any Department of Energy Occurrence Reporting and Processing System reports related to shipments; and documentation maintained by the program for the supporting milestones for the performance measure. Official justifications are contained internally within program secondary documents to include Office of Mission Operations Manager Certification Memorandum, On-Time Delivery Quarterly Report, On-Board Agent Availability Report, and an Office of Secure Transportation Strategic Implementation Plan Milestone Status Report.				

NNSA IT and Cybersecurity

Program	NNSA IT and Cybersecurity				
Performance Goal (Measure)	**Cybersecurity Program Execution Guidance (PEG)** - Annual percentage of performance evaluations of NNSA sites measured against the Objectives and Key Outcomes set forth in FY PEG resulting in the rating of "satisfactory or better" as defined by FAR 16.401 c(3).				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	100 % of performance evaluations of NNSA sites resulting in at least a "Satisfactory" rating or better per FAR 16.401 c(3)	100 % of performance evaluations of NNSA sites resulting in at least a "Satisfactory" rating or better per FAR 16.401 c(3)	100 % of performance evaluations of NNSA sites resulting in at least a "Satisfactory" rating or better per FAR 16.401 c(3)	100 % of performance evaluations of NNSA sites resulting in at least a "Satisfactory" rating or better per FAR 16.401 c(3)	100 % of performance evaluations of NNSA sites resulting in at least a "Satisfactory" rating or better per FAR 16.401 c(3)
Result	**Not Met** - 85	**Met** - 100	**Met** - 100	**Met** - 100	**Not Met** - 85
Endpoint Target	Annually, achieve at least a satisfactory rating of 100% of site performance evaluations of FY PEG implementation.				
Commentary on 2024 Results (Action Plan if Not Met)	NNSA achieved a satisfactory or better rating on 85% of site performance evaluations of FY PEG implementation. Completion of efforts at one NNSA site to separate the mission work and IT systems between two sites negatively impacted the overall results of achieving the APR target this FY. Evaluations concluded with the one site being one point below the rating for satisfactory. The Field Office is finalizing plans with the site to get back on track with PEG expectations in FY 2025. **Action Plan:** The Field Office is finalizing plans with the site to get back on track with PEG expectations in FY25.				
Documentation, Limitations, Methodology, Validation, and Verification	FY 2024 Cybersecurity PEG (CUI) FY 2024 Site Performance Results (CUI) PEG Performance Submissions (CUI)				

Stockpile Research, Technology, and Engineering

Program	Stockpile Research, Technology, and Engineering				
Performance Goal (Measure)	**Science-Based Capabilities** - Provide the science-based capabilities necessary to support stockpile certification on an annual basis.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	100 % of progress	100 % of progress	100 % of progress	100 % of progress	100 % of progress
Result	**Met** - 100	**Met** - 100	**Met** - 100	**Met** - 100	**Met** - 100
Endpoint Target	Each year provide the science-based capabilities (e.g., experimental infrastructure, assessment and certification methodologies, experiments, data, and analyses) required to enable the annual assessment and certification of the stockpile including certification of life extension programs (LEP) and weapon modifications.				
Documentation, Limitations, Methodology, Validation, and Verification	Stewardship Capability Delivery Schedule, Milestone Reporting Tool, White Paper on Quantification of Margins and Uncertainty Performance Measure; Subcritical Experiments Schedule, Office of Experimental Sciences' Implementation Plan; and Assessment Science subprogram plans.				

Program	Stockpile Research, Technology, and Engineering				
Performance Goal (Measure)	**Engineering and Surveillance Capabilities** - Percentage progress toward providing planned/scheduled capabilities for survivability and surveillance required for annual assessment of the stockpile, Life Extension Program decisions, and early identification of aging problems that could degrade stockpile performance.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	100 % completion of specified activities/deliverables identified in the annual update of the Engineering Program implementation plan	100 % completion of specified activities/deliverables identified in the annual update of the Engineering Program implementation plan	100 % completion of specified activities/deliverables identified in the annual update of the Engineering Program implementation plan	100 % completion of specified activities/deliverables identified in the annual update of the Engineering Program implementation plan	% completion of specified activities/deliverables identified in the annual update of the Engineering Program implementation plan
Result	**Met** - 100	**Met** - 100	**Met** - 100	**Met** - 100	**Met** - 100
Endpoint Target	100 % completion of specified activities/deliverables identified in the annual update of the Engineering Program implementation plan (Annual)				

Documentation, Limitations, Methodology, Validation, and Verification	Milestones and a table of deliverables supporting the performance measures are documented in the Program Implementation Plan (PIP). Weekly and monthly site status calls with the Federal Program Managers are documented. Milestone Reporting Tool (MRT) status reports also document progress performance on a quarterly basis.

Program	Stockpile Research, Technology, and Engineering				
Performance Goal (Measure)	**High Energy Density (HED) Physics Research** - Complete high energy density physics research needed to support the nuclear weapons program as embodied in the Stewardship Capability Delivery Schedule (SCDS).				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	54 % of progress (cumulative)	61 % of progress (cumulative)	68 % of progress (cumulative)	75 % of progress (cumulative)	% of progress (cumulative)
Result	**Met** - 54	**Met** - 61	**Met** - 68	**Met** - 75	**Met** - 100
Endpoint Target	By FY 2024, complete the required ICF Program activities for the NA-11 Stewardship Capability Delivery Schedule (SCDS). Beyond FY 2023, all other ICF Program activities required to support long-term stockpile research and development efforts in ignition science will continue post-FY24 as planned.				
Documentation, Limitations, Methodology, Validation, and Verification	Progress on these activities and investment are tracked and documented through 1. Office of Experimental Sciences' Implementation Plan – This Plan documents annually the program of work to be accomplished in support of this stockpile research goal and the SCDS, including the program milestones from MRT. The Plan is drafted prior to the upcoming Fiscal Year and is only updated once the PBR is released, in case of any funding changes that may impact program goals and priorities for that year. 2. Milestone Reporting Tool (MRT) – Prior to the upcoming Fiscal Year, the HED Federal Program Managers work with the lab/sites to determine what milestones will be worked in the upcoming Fiscal Year to achieve the program goals and will upload them to MRT. At the end of each quarter, the milestones are scored and the HED Federal Program Managers meet with each of the NNSA labs/sites to discuss progress. 3. Milestone Completion Memos – At the end of each Fiscal Year, the Federal Program Managers work with the lab/sites to draft completion memos for each milestone due in MRT for that Fiscal Year. The completion memo documents the work that was done throughout the Fiscal Year to complete each milestone. 4. Quarterly Reports by the HED Council and the ICF Council – Prior to the upcoming Fiscal Year, the HED and ICF Councils establish their experimental campaign plans in support of the program of work, SCDS, and the Implementation Plan. At the end of each quarter, the Councils document the execution of the planned HED program of work on the major HED facilities.				

Program	Stockpile Research, Technology, and Engineering				
Performance Goal (Measure)	**Component Manufacturing Development** - Complete maturation of production technologies and manufacturing capabilities to support Stockpile Management, nuclear weapons refurbishment, and assessment activities.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	5 deliverables	5 deliverables	5 deliverables	5 deliverables	5 deliverables
Result	**Met** - 5	**Met** - 5	**Met** - 5	**Met** - 5	**Met** - 5
Endpoint Target	Annually complete deliverables required to mature production technologies and manufacturing capabilities that will then be utilized at the sites and plants to improve our stockpile stewardship mission.				
Documentation, Limitations, Methodology, Validation, and Verification	Milestones and a table of deliverables supporting the performance measures are documented in the Program Implementation Plan (PIP). Weekly and monthly site status calls with the Federal Program Managers are documented. Milestone Reporting Tool (MRT) status reports also document progress performance on a quarterly basis. In addition, bi-annual and annual accomplishments are provided by the sites to Federal Program Manager in formal program reviews. Federal Program Manager and staff confirm capabilities completion during site field visits and Program Reviews.				

Program	Stockpile Research, Technology, and Engineering				
Performance Goal (Measure)	**Nuclear Weapons Simulation Capability (NWSC) Progress** - Progress in developing simulation capabilities to support the current Stewardship Capability Delivery Schedule				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	60 %	65 %	70 %	74
Result	N/A	**Met** - 60	**Met** - 65	**Met** - 70	**Met** - 74
Endpoint Target	By the end of FY 2030, 100% of the Advanced Simulation and Computing (ASC) capabilities needed to support the current Stewardship Capability Delivery Schedule goals will be delivered.				
Documentation, Limitations, Methodology, Validation, and Verification	Laboratory reports to HQ Program Manager; NA-10 Milestone Reporting Tool (MRT) status reports. The methodology used is described in the Laboratory reports and includes systematic validation and verification assessments to support the conclusions of the reports.				

Infrastructure and Operations

Program	Infrastructure and Operations

Performance Goal (Measure)	**Environmental Monitoring and Remediation** - Annual percentage of environmental monitoring and remediation deliverables that are required by regulatory agreements to be conducted at NNSA sites under Long Term Stewardship (LTS) that are executed on schedule and in compliance with all acceptance criteria.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	95 % of deliverables	95 % of deliverables	95 % of deliverables	95 % of deliverables	95 % of deliverables
Result	**Exceeded** - 97	**Exceeded** - 100	**Exceeded** - 100	**Exceeded** - 100	**Exceeded** - 100
Endpoint Target	Annually, submit on schedule and receive regulatory approval of at least 95% of all environmental monitoring and remediation deliverables that are required at NNSA sites under LTS by regulatory agreements.				
Commentary on 2024 Results (Action Plan if Not Met)	The LTS Program met 32 of 32 reportable milestones. Two additional milestones were removed from FY 2024 reporting. The regulatory entities for Lawrence Livermore National Laboratory extended East-West Firing Areas Five-Year Review (FYR) to the 1st Quarter of FY 2025 to allow additional time for regulatory agency review, document revision, and regulatory comment response preparation and approved incorporation of the Draft Addendum to a FYR document into the next FYR document due in a subsequent fiscal year.				
Documentation, Limitations, Methodology, Validation, and Verification	RCRA Permits; monthly, quarterly, and annual reports to regulatory agencies including compliance monitoring reports, corrective action reports, groundwater sampling and groundwater monitoring reports, area specific annual reports, permit-required monitoring reports, regulatory required annual reports, and five-year review reports.				

Infrastructure and Operations

Program	Infrastructure and Operations				
Performance Goal (Measure)	**Maintenance** - Percentage of preventive maintenance (PM) spending vs total maintenance (TM)				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	37 % PM conducted	37.5 % PM conducted	22.3 % PM conducted	22.3 % PM conducted	22.3
Result	**Not Met** - 24.6	**Not Met** - 27.8	**Exceeded** - 28.2	**Exceeded** - 26.4	**Exceeded** - 30.3
Endpoint Target	PM to TM target is 50%				
Commentary on 2024 Results (Action Plan if Not Met)	The 22.3% target for the ratio between Preventive Maintenance (PM) to Total Maintenance (TM) was exceeded for FY 2024. NNSA has focused on planning and scheduling its maintenance activities by ensuring that resources including labor and parts are available to perform the intended maintenance. This has enabled the improved reliability of infrastructure systems.				

Documentation, Limitations, Methodology, Validation, and Verification	Monthly costs reported in CostEX, NNSA's central cost reporting system. Data is validated by Program Managers

Defense Nuclear Security

Program	Defense Nuclear Security				
Performance Goal (Measure)	**Enterprise Safeguards & Security Planning & Analysis Program** - to better analyze complex program operations; resource evaluation, development of innovative solutions to emerging program needs; identification of vulnerabilities and gaps in plans and programs, and to ensure program success and alignment with the DOE and NNSA missions.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	90 % index	95 % index	95 % index	95 % index	95 % index
Result	**Met** - 90	**Met** - 95	**Met** - 95	**Met** - 95	**Met** - 95
Endpoint Target	By 2023, achieve an improved corporate understanding of site operations, protection strategies, and risk acceptance that enables decision-makers to make true cost/benefit and risk acceptance decisions for physical security, better risk-informed resource allocation decisions, and more balance across NNSA sites, maintaining a 95% index thereafter.				
Documentation, Limitations, Methodology, Validation, and Verification	NNSA SD 470.4-2 and Security Planning Basis Implementation Framework				

NNSA Federal Salaries & Expenses

Program	NNSA Federal Salaries & Expenses				
Performance Goal (Measure)	**Federal Administrative Costs** - Maintain the NNSA Federal Salaries and Expenses federal administrative costs as a percentage of total Weapons Activities and Defense Nuclear Nonproliferation program costs at less than 6%.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	≤ 5.9 %	≤ 5.9 %	≤ 5.9 %	≤ 5.9 %	5.9
Result	**Exceeded** - 3.2	**Exceeded** - 3	**Exceeded** - 4	**Exceeded** - 2.4	**Exceeded** - 2.6
Endpoint Target	In keeping with expectations that administrative costs be minimized, maintain the NNSA Federal Salaries and Expenses federal administrative costs as a percentage of total Weapons Activities and Defense Nuclear Nonproliferation program costs at less than 6%.				
Documentation, Limitations, Methodology, Validation, and Verification	The September 2024 BFR report was used to determine the 4th Qtr. program cost percentages. The calculation takes the costs of Weapons Activities less Secure Transportation plus Defense Nuclear Nonproliferation, divided by FSE costs.				

Strategic Objective14. Forge solutions that enable global security and stability.

Strategic Goal Measure: Convert or verify the shutdown of Highly Enriched Uranium (HEU) fueled research reactors: By the end of FY 2026, convert or verify shutdown prior to conversion of approximately 113 HEU reactors and isotope production facilities.

- As of the end of FY 2024, NNSA has converted or verified shutdown of 109 HEU reactors and isotope productions facilities.

Strategic Goal Measure: Remove or confirm the disposition of weapons-usable nuclear material: By the end of FY2026, remove or confirm the disposition of 7,360 kilograms of highly enriched uranium and/or plutonium.

- As of the end of FY 2024, NNSA has removed or confirmed the disposition of 7,345 kilograms of highly enriched uranium and plutonium. NNSA is on track to remove an additional 15 kilograms of highly enriched uranium and/or plutonium by the end of FY 2026.

Strategic Goal Measure: Establish and sustain international partnerships to strengthen the operational capability of counter nuclear smuggling systems. By the end of FY2026, 81% of international partner agencies will demonstrate operational capability of their counter nuclear smuggling systems.

- By the end of FY2024, DOE has made steady progress toward the FY26 target of 81% of international partners demonstrating operational capability of their counter nuclear smuggling systems. We remain on track to achieve this target by the end of FY2026.

Strategic Goal Measure: Maintain technical and manpower readiness for future U.S.-led monitoring and verification of denuclearization activities: From FY 2022–2026, conduct regular verification team exercise and training events, approximately four per year.

- The Nuclear Materials Verification Program conducted 10 verification team exercise and training events in FY2022, 12 events in FY2023, and 13 events in FY2024. The Program remains on target to complete additional training activities as planned through the reporting period.

Strategic Goal Measure: Improve U.S. capabilities to detect and characterize low yield and evasively conducted underground nuclear explosions: By FY 2026, conclude first phase of integrated field experiments at the Low-Yield Nuclear Monitoring testbed.

- Completed the first phase in the first quarter of FY 2024 with a radioactive tracer and chemical high-explosive experiment to improve understanding of signatures associated with evasively conducted low-yield underground nuclear tests. The second phase of integrated field experiments will conclude by FY 2028.

Strategic Goal Measure: Enhance and improve the Emergency Management Enterprise and Departmental Continuity programs, focused on improving integration of, and collaboration with, the various DOE and NNSA leadership and operations centers, and interagency partners.

- Engaged with over 30 organizations across DOE/NNSA to assess geospatial emergency management needs and provided live, dynamic geospatial products tailored to their missions. As an example, provided wildland fire products to firefighters in the field.

Strategic Goal Measure: By FY 2023, reestablish expectations for and implementation of the Emergency and Incident Management Council and the Unified Coordination Group for DOE and NNSA.

- The Unified Coordination Group has been activated on multiple occasions in FY 2024 such as the Crowdstrike IT outages, Pantex wildland fire, and Nevada National Security Site incidents under the new structure. Based on findings after the incidents that occurred in FY 2024, NA-40 is utilizing new technologies and expanded rosters to foster effective emergency response.

Strategic Goal Measure: By FY 2023, Develop an innovative, unclassified version of dynamic, near real-time common operating picture and readiness assurance for use by DOE and NNSA Senior Leadership.

- An unclassified version of dynamic, near real time common operating picture is in beta testing with a group of over 300 DOE/NNSA users. Feedback has been incorporated and the common operating picture is consistently being improved upon for the end user experience. An enterprise-wide solution is currently going through the procurement and award process.

Strategic Goal Measure: FY 2023–2026, ensure and improve continued interoperability of continuity communications systems across DOE/NNSA and with interagency partners.

- In FY 2024, there was an expansion of services to continuity support contracts to deliver additional continuity communications support at alternative locations and to DOE/NNSA senior leadership. Evaluation of end-of-life cycle systems and the procurement of system replacements continues.

Program	Material Management and Minimization (M3)				
Performance Goal (Measure)	**Highly Enriched Uranium (HEU) Reactors Converted or Shutdown** - Cumulative number of HEU reactors and isotope production facilities converted or verified as shutdown prior to conversion.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	106 facilities	108 facilities	109 facilities	110 facilities	111 facilities
Result	**Met** - 106	**Not Met** - 107	**Not Met** - 108	**Not Met** - 109	**Not Met** - 109
Endpoint Target	By 2040, convert or verify the shutdown prior to conversion of 135 HEU reactors and isotope production facilities.				
Commentary on 2024 Results (Action Plan if Not Met)	**Action Plan:** The team has achieved fuel fabrication safety approvals. HALEU fuel for one of the KUCA facilities was fabricated and shipped to Y-12 for repackaging. It is now en route to the Japan KUCA facility. HALEU fuel fabrication for the second KUCA facility is near completion. The conversion of the first facility is now slotted for early FY 2025, with the second facility conversion expected in late FY 2025. The Office will continue to engage with its counterparts to closely track schedule for shipment of HALEU and restart.				
Documentation, Limitations, Methodology, Validation, and Verification	PMM reporting on facility conversions or shutdowns are based on Office of Reactor Conversion and Uranium Supply Monthly Reports providing updates from the National Laboratories on all ongoing activities.				

Program	Material Management and Minimization (M3)				
Performance Goal (Measure)	**Nuclear Material Removed or Confirmed as Disposed** - Cumulative number of kilograms of weapons-usable nuclear material removed or confirmed as disposed.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	7,140 kilograms	7,230 kilograms	7,300 kilograms	7,310 kilograms	7,330 kilograms
Result	**Exceeded** - 7,216.2	**Exceeded** - 7,232.03	**Not Met** - 7,288	**Exceeded** - 7,337	**Exceeded** - 7,345

Endpoint Target	By 2029, remove or confirm the disposition of 7,680 kilograms of weapons-usable nuclear material, enough for approximately 300 nuclear weapons.
Commentary on 2024 Results (Action Plan if Not Met)	During an internal audit of Remove Office metrics during Q4 FY 2024, a cumulative discrepancy of 3 kg was identified for two shipments of HEU from Canada completed in October and November 2022. These shipments were incorrectly reported as 4.4 kg each due to a miscommunication between the federal program manager and technical expert and a failure to follow internal practices for accurately reporting metrics. The correct metrics for these shipments were 4.3 kg and 1.5 kg, respectively. Metrics have been corrected; however, the correct metric for FY 2023 was 46.5 kg instead of the 49.5 kg previously reported (note: this does not change Remove exceeding its FY 2023 or FY 2024 metrics). This error has been corrected and additional training has been provided to staff to prevent similar errors in the future.
Documentation, Limitations, Methodology, Validation, and Verification	The PMM values for the Nuclear Material Removal and Elimination Program are calculated by summing the cumulative number of kilograms (kg) of vulnerable nuclear material (HEU and plutonium) removed or disposed. FedEx Custom Critical Bill of Lading

Global Material Security

Program	Global Material Security				
Performance Goal (Measure)	**Counter Nuclear Smuggling Assessment** - Annual percentage of NSDD partner agencies demonstrating operational capability of counter nuclear smuggling systems.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	75 % of partner agencies	76 % of partner agencies	77 % of partner agencies	78 % of partner agencies
Result	N/A	**Exceeded** - 78	**Exceeded** - 84	**Exceeded** - 85	**Exceeded** - 80
Endpoint Target	By the end of FY 2030, achieve an annual rate of at least 85% of NSDD partner agencies demonstrating operational capability of counter nuclear smuggling systems.				
Documentation, Limitations, Methodology, Validation, and Verification	NSDD Metric Assessment Tool and Counter Nuclear Smuggling Assessment Metric Determination Guide (2021-11-05)				

Program	Global Material Security

Performance Goal (Measure)	**Radiological Devices Eliminated** - Annual number of radiological devices eliminated.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	N/A	85 devices	85 devices
Result	N/A	N/A	N/A	**Exceeded** - 101	**Exceeded** - 93
Endpoint Target	Eliminate 90 devices per year through 2035.				
Commentary on 2024 Results (Action Plan if Not Met)	Eliminated 93 devices exceeding the 2024 goal of eliminating 90 devices per year. This metric replaces the Radiological Buildings Protected metric terminated by NNSA in FY 2023.				
Documentation, Limitations, Methodology, Validation, and Verification	Office of Radiological Security (ORS) monthly performance reports, ORS Implementation Guidelines, ORS Program Management Plan.				

Nonproliferation and Arms Control

Program	Nonproliferation and Arms Control				
Performance Goal (Measure)	**Safeguards Tools** - Transfer tools to international regimes and other countries to address identified safeguards deficiencies.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	5 tools	5 tools	5 tools	5 tools	5 tools
Result	**Exceeded** - 9	**Exceeded** - 7	**Exceeded** - 7	**Exceeded** - 6	**Met** - 5
Endpoint Target	Annually transfer tools to international regimes and other countries to address identified safeguards deficiencies.				
Commentary on 2024 Results (Action Plan if Not Met)	Met the annual target by transferring a total of 5 tools and technologies to the International Atomic Energy Agency (IAEA) and international partners in FY2024. This result is important because the tool transfers will allow partners to more effectively and efficiently account for and control nuclear materials and help ensure complete and correct reporting to the IAEA.				
Documentation, Limitations, Methodology, Validation, and Verification	Shipping records; technical reports; e-mails from member states' regulators to acknowledge the receipts of the respective technologies; photographs; and other documentation.				

Nuclear Counterterrorism and Incident Response Program

Program	Nuclear Counterterrorism and Incident Response Program				
Performance Goal (Measure)	**Incident Response Readiness Index (IRRI)** - Annual overall organizational readiness to respond to and mitigate radiological or nuclear incidents worldwide.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	91 IRRI	0.91 IRRI	0.91 IRRI	0.91 IRRI	0.91 IRRI
Result	**Not Met** - 89	**Not Met** - 0.89	**Exceeded** - 0.92	**Exceeded** - 0.95	**Exceeded** - 0.98
Endpoint Target	Annually, maintain a Readiness Index of 91 or higher.				
Commentary on 2024 Results (Action Plan if Not Met)	Nuclear Emergency Support Team (NEST) response assets maintained an average readiness rating of 0.98 in FY24.				
Documentation, Limitations, Methodology, Validation, and Verification	ARMS Reports; Weekly Meetings; Daily situational reports; Daily Infrastructure reports; ARMS website https://arms.doerer.us/main/index; After action reports – evaluators; After action reports – controllers; State, local, & federal reports validating our response efforts; Task Orders/Work Authorizations; Program Manager status assessments.				

Strategic Objective 15. Harness the atom to safely, reliably, and affordably power a global fleet that enables unrivaled responsiveness, endurance, stealth, and warfighting capability

Naval Reactors

Program	Naval Reactors				
Performance Goal (Measure)	**S1B Reactor Plant Design** - Cumulative percentage of work complete on the Columbia-Class submarine reactor plant design.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	80 % complete	83 % complete	87 % complete	90 % complete	95 % complete
Result	**Exceeded** - 81.1	**Exceeded** - 85.3	**Exceeded** - 88.8	**Exceeded** - 93	**Met** - 95
Endpoint Target	By the end of FY 2027, complete 100% of the Columbia-Class submarine reactor plant design (formerly known as the Ohio-Class Replacement).				

Strategic Goal Measure: Complete COLUMBIA-Class submarine reactor plant design: By FY 2027, complete the submarine reactor plant design.

- As of 9/30/2024, 95% of the Columbia-Class Submarine Reactor Plant has been completed.

Goal 5: Promote Equity and Energy Justice

Strategic Objective 16. Advance equity in DOE's procurement, funding, R&D and D&D processes and activities

Office of Small and Disadvantaged Business Utilization

Program	Office of Small and Disadvantaged Business Utilization				
Performance Goal (Measure)	**Prime contracting awards** - Advocate for small business set-asides and track the agency prime contracting awards to small businesses with the goal of ensuring DOE meets or exceed the Small Business Administration's (SBA) determined percentage of DOE projected Federal Spend for primes.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	14 %	14%	13.08 %	17%	17 %
Result	**Exceeded** - 14.41	**Exceeded** - 21.19	**Exceeded** - 64.93	**Exceeded** - 23.96	**Data Not Available**
Endpoint Target	Meet or exceed SBA's determined percentage of DOE projected Federal spend for prime Small Business (SB) contracts (inclusive of first-tier M&O subcontracts).				
Commentary on 2024 Results (Action Plan if Not Met)	Achievement data is not yet available from SBA and is expected in the spring of 2025. OSDBU anticipates another year of exceeding prime targets (based on preliminary DOE prime and subcontracting data analysis).				
Documentation, Limitations, Methodology, Validation, and Verification	The data systems used for validation are the Federal Procurement Data System (FPDS) and Management and Operating Subcontracting Reporting Capability (MOSRC).				

Program	Office of Small and Disadvantaged Business Utilization				
Performance Goal (Measure)	**Subcontracting awards** - Advocate for small business subcontracting and track the subcontracting awards with the goal of ensuring DOE meets or exceeds the Small Business Administration's (SBA) determined percentage of DOE projected Federal Spend for subcontracting.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	45 %	50%	49 %	49%	49 %
Result	**Exceeded** - 52.25	**Exceeded** - 51.77	**Exceeded** - 24.24	**Exceeded** - 50.2	**Data Not Available**
Endpoint Target	Meet or exceed SBA's determined percentage of DOE projected Federal spend for prime Small Business (SB) subcontracts (not including first-tier M&O subcontracts).				
Commentary on 2024 Results (Action Plan if Not Met)	Achievement data is not yet available from SBA and is expected in the spring of 2025. OSDBU anticipates another year of exceeding prime targets (based on preliminary DOE prime and subcontracting data analysis).				
Documentation, Limitations, Methodology, Validation, and Verification	The data systems used for validation are the Federal Procurement Data System (FPDS) and Management and Operating Subcontracting Reporting Capability (MOSRC).				

Strategic Objective 17. Increase access to affordable, sustainable, and reliable energy for disadvantaged communities

Strategic Goal Measure: By FY 2025, increase DOE financial assistance for MSI's, with a goal of 15% of awards awarded to MSI's.

- SC has significantly expanded participation by MSIs in its sponsored research programs over the past four years, with Historically Black Colleges and Universities (HBCUs) and Hispanic Serving Universities (HSIs). Between FY 2021 and FY 2024, the number of applications received from HBCUs and HSIs increased year over year, the number of new and renewal awards to HBCUs and HSIs increased year over year, and the total funding to HBCUs and HSIs increased year over year. Final data from FY 2024 is still pending.
- On March 25, 2024, EM's Minority Serving Institutions Partnership Program (EM MSIPP) awarded $24.7 million in financial assistance grants to minority serving institutions (MSIs) in Florida, New Jersey, Nevada, New Mexico, and Texas. The awards will focus on enhancing MSI programs to help foster a sustainable and diverse EM science, technology, engineering, and mathematics workforce pipeline. The awards will also aid in promoting the development of a nationally engaged scientific and engineering workforce that will lead to future career pathways in the EM complex for underrepresented groups.
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- The OSDBU continued DOE and NNSA Acquisition Forecast improvements through the Acquisition Forecast Improvement Working Group (AFIWG). The OSDBU also continues to work with MA and OCIO to develop an updated, centralized forecast subject to funding availability.

Strategic Goal Measure: By the end of first quarter FY 2024, expand collaborations with agency-internal and external small business resources, SBA's Small Business Development Centers, and Procurement Technical Assistance Centers.

- The OSDBU attended monthly Interagency Council and Small Business Procurement Advisory Council meetings.
- The OSDBU collaborated with SBA and APEX Accelerators (formerly PTACs) to host a Small Business Clinic at the DOE Small Business Forum and Expo in June 2024.
- The OSDBU led a revision to the Memorandum of the Understanding with the Department of Commerce Minority Business Development Agency and the DOE Office of Energy Justice and Equity.

Strategic Goal Measure: By the end of FY 2023, institute agency Senior Leadership guidance encouraging application of set-asides, by consistent application of the "Rule of Two" for total small business set-asides, socioeconomic set-asides, and master agreements and providing for designated set-asides, and enforcing statutory set-asides for Small Disadvantaged Businesses, Women-Owned Small Businesses, Service-Disabled Veteran-Owned Small Businesses, and Historically Underutilized Business Zones firms.

- In January 2024, the OSDBU, partnered with DOE Senior Procurement Executives, issued a memo to the DOE Acquisition Community providing guidance on maximizing the use of small businesses and providing the FY24 DOE small business goals.
- In May 2024, the OSDBU issued a memo to the DOE Acquisition Community providing guidance and best practices in maximizing awards for Service-Disabled Veteran-Owned and Historically Underutilized Business Zone Small Business in FY 2024 and beyond.
- In August 2024, the OSDBU, partnered with DOE Senior Procurement Executives, issued a memo to the DOE Acquisition Community providing status of FY24 small business goal achievements and encouraging increased awards to socio-economic small business concerns.

Strategic Goal Measure: By the end of FY 2023, update DOE Mentor-Protégé Program guidance to be more consistent across participants, and to encourage Mentors to offer more broadly applicable opportunities to Protégés.

- The OSDBU updated the Mentor Protégé Program (MPP) guidance and made program infrastructure improvements through the MPP Improvement Working Group.
- OSDBU co-hosted with the Sandia National Laboratory the first ever DOE MPP Forum in August 2024 to unveil the program improvements and provide networking with DOE mentors and potential small business proteges.

Strategic Goal Measure: By the beginning of the second quarter FY 2023, provide more data analysis resources to agency-internal small business advocates to better capture prime and subcontracting data needed to assess more effectively small business programs. This includes instituting regulations to address data required for reporting and oversight and providing additional standardized small business data analytics to enhance advocacy efforts.

- The OSDBU hired a Senior Data Analyst in October 2023 to serve as a dedicated small business data resource for more standardized and accessible small business data for improved advocacy and compliance with regulatory requirements.

Strategic Goal Measure: By the end of FY 2023, institute Senior Leadership guidance to make proposal evaluation criteria and scoring methodology more conducive to small business participation.

- In January 2024, the OSDBU, in partnership with DOE Senior Procurement Executives, issued a memo to the DOE Acquisition Community providing guidance on maximizing the use of small businesses, including encouraging solicitation language supporting meaningful work being proposed for small business performance.

Strategic Goal Measure: By the end of FY 2022, launch an ambitious Equity Earthshot to address energy insecurity and energy burden.

- FY24: LPO continued its commitment to addressing energy insecurity and energy burden by closing Sunnova Energy Corporations Project Hestia for an up to $3 billion partial loan guarantee to make distributed energy resources (DERs), including rooftop solar,

battery storage, and virtual power plant (VPP)-ready software available to more American homeowners. Project Hestia is expected to prioritize a focus on households in disadvantaged communities across the United States, including providing up to 20% of installed systems through its loans to homeowners in Puerto Rico. The partial loan guarantee enables Sunnova to provide loans for clean energy systems for approximately 75,000 to 115,000 homeowners throughout the United States, including Puerto Rico. Additionally, LPO extended further support to Puerto Rico by conditionally committing to and closing a loan guarantee of up to $861.3M to Clean Flexible Energy, LLC to construct solar PV and battery storage systems, enhancing grid stability and resilience.

Strategic Goal Measure: By the end of FY 2022, create a research partnership between EIA and EJE designed to collect and analyze data on energy insecurity and energy burden.

- EIA established a partnership with DOE's Office of Energy Justice and Equity to share research findings and ensure energy justice and equity interests are considered in the development of EIA's policy-neutral statistics and in its models used for forecasting and projection. The two Departmental Elements have already begun to share newly identified data sources that might be useful in assessing the validity of statistics from a new survey of residential utility disconnections and to develop more robust future community-level estimates from the Residential Energy Consumption Survey (RECS).

Strategic Goal Measure: By the end of FY 2023, launch a research initiative to analyze gaps in energy access nationally.

- In FY 2024, EIA continued efforts to provide new insight into energy trends and their community-level impacts, including data that could help inform the broader policy discussion around energy insecurity. For example, EIA conducted a pilot data collection of natural gas and electric service providers to determine the feasibility of an ongoing survey to collect information on final notices, disconnections, and reconnections for bill nonpayment across residential customers. Based on its findings, EIA prepared and executed a Federal Register Notice detailing plans for a survey that could be deployed starting in FY 2025 to collect and publish monthly data on an annual basis.

Strategic Objective 18. Ensure 40 percent of the overall benefits of relevant federal investments are delivered to disadvantaged communities

Strategic Goal Measure: By the end of first quarter FY 2023, enhancing the existing Energy Justice Dashboard (BETA) to include metrics related to the Justice40 Initiative.

- FY24: Beginning in FY24, all LPO Programs require Community Benefits Plans and Justice40 and Workforce Reports. All LPO Programs are Justice40 covered programs. LPO is publishing our first set of CBPs in October 2024. IN FY25, LPO will begin to receive the Justice40 Reports.
- In 2024, EM continued to interact with stakeholders on the Justice40 Initiative at various EM sites through presentations, listening sessions, conference calls, and in-person or virtual meetings. EM provided input for the White House's Phase 2 Environmental Justice Scorecard. The Scorecard is a government-wide assessment of what the federal government is doing to advance environmental justice. EM was highlighted in the Scorecard related to its efforts with the Rattlesnake Mountain Sacred Site Tribal Consultation, Environmental Management Site-Specific Advisory Board, and removal of 1.3 million pounds of hazardous refrigerant from the Paducah, Kentucky cleanup site.

Strategic Goal Measures:

- By the end of second quarter FY 2023, create a strategic roadmap, organized by clean energy industry, for job creation.
- By the end of second quarter FY 2023, create a strategic roadmap for engaging partners such as job training programs, MBEs, MSIs, technical training institutions, and community colleges to ensure diverse participation in the agency's deployment activities.
- Develop performance metrics for job creation across each clean energy industry.
    - FY24: Beginning in FY24, all LPO Programs require Community Benefits Plans and Justice40 and Workforce Reports. All LPO Programs are Justice40 covered programs. In FY25, LPO is launching the LPO Better Borrower Challenge which will prioritize, among other goals, opportunities for workers in communities.

Program	Bonneville Power Administration				
Performance Goal (Measure)	**BPA System Reliability Performance - NERC Rating** - Attain average North American Electric Reliability Corporation (NERC) compliance ratings for NERC Control Performance Standard 1 (CPS1) of greater than or equal to 100 percent.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	≥ 100 percent	≥ 100 percent	≥ 100 percent	≥ 100 percent	≥ 100 percent
Result	**Met** - 186.4	**Met** - 178.4	**Met** - 192.1	**Met** - 188.4	**Exceeded** - 187.3
Endpoint Target	Continually ensure the reliability of the electrical grid by attaining a NERC CPS1 rating of equal to or greater than 100 percent each year.				
Commentary on 2024 Results (Action Plan if Not Met)	BPA exceed Electric Reliability Council (NERC) compliance ratings for NERC Control Performance Standard 1 (CPS1) measuring ACE (Area Control Error or generation/load balance) with respect to interconnection frequency on one-minute intervals (rating >100%). CPS1 is calculated monthly as a rolling 12-month average.				
Comment	CPS1 measures generation/load balance on one-minute intervals.				
Documentation, Limitations, Methodology, Validation, and Verification	Results for CPS1 are calculated in the Automated Generation Control system, verified by Transmission Services and reported to NERC quarterly. Results are verified and confirmed by executive.				

Program	Federal Energy Management Program				
Performance Goal (Measure)	**Private Investment** - Private investment secured because of direct FEMP program activity (Cumulative $Million)				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	$ 400 Million	$ 400 Million	400	400 Millions	400 Millions
Result	**Exceeded** - 1,140	**Exceeded** - 504.1	**Exceeded** - 484.3	**Not Met** - 372.3	**Not Met** - 334.3
Endpoint Target	Between FY2020 and FY2025, document $2 billion of efficiency investment leveraged from private sector to capitalize on efficiency technology cost savings.				
Commentary on 2024 Results (Action Plan if Not Met)	Delayed impacts due to slowdown during COVID (3/2020 - 3/2022), economic impacts (increased interest rates, higher supply chain costs), project development and award delays. **Action Plan:** With release of new EO, investments are expected to return to normal.				
Documentation, Limitations, Methodology, Validation, and Verification	Federal efficiency investment from performance contracting awards (ESPC, UESC, etc.) that are a result of FEMP program activity. FEMP activities to support the DOE IDIQ ESPC contracts, ENABLE, and UESC projects help to facilitate non-federal investments to improve the efficiency of federal facilities. This does not include other performance contracts including but not limited to the Army MATOC ESPC or stand-alone performance contracts.				

Strategic Objective 19. Support economic development, including through clean economy opportunities for workers in communities and industries in transition, like former coal and power plant communities

FECM - Office of Resource Sustainability

Program	FECM - Office of Resource Sustainability				
Performance Goal (Measure)	**Minerals Sustainability** - By 2035, enable unconventional and secondary sourcing for half of domestic rare earth element (REE) needs.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	N/A	For at least 10 regions across the country, characterize regional resources and opportunities for critical minerals and materials and rare earth elements (CMM/REE) production, especially from unconventional and/or secondary sources, and collect data that is needed for resource mapping.	Complete first Phase of CORE-CM Initiative projects, producing the first substantial broad regional data for characterization and resource assessment for REE and select CM from unconventional and secondary sources.
Result	N/A	N/A	N/A	**Met**	**Met**
Endpoint Target	To ensure the enabling of unconventional and secondary sourcing for half of domestic REE needs by FY 2035, FECM plans to develop detailed mapping of domestic CMM/REE reserves in coal mining regions and other unconventional resources by FY 2030 and validate advanced technologies to reduce costs by 30% in an environmentally sustainable manner by FY 2035.				
Commentary on 2024 Results (Action Plan if Not Met)	All (13/13) projects have submitted data to Energy Data Exchange (EDX), thus producing the first substantial broad regional data for characterization and resource assessment for REE and select CM from unconventional and secondary sources, thereby completing the Phase 1 goal.				
Documentation, Limitations, Methodology, Validation, and Verification	Documentation: All 13 projects out of 13 awards have provided data. This is verified by a TRS report draft summarizing a CORE-CM wide effort to document best practices for characterization of critical minerals for secondary and unconventional sources.				

Strategic Objective 20. Enhance engagement and energy economic development opportunities in tribal communities

Indian Energy

Program	Indian Energy				
Performance Goal (Measure)	**Generation Capacity** - Increase total installed generation capacity from projects receiving Indian energy deployment grants (cumulative beginning in FY 2019, Megawatts, MW)				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	11 MW	18 MW	18 MW	32 MW	45 MW
Result	**Exceeded** - 19.3	**Exceeded** - 21.9	**Exceeded** - 26	**Exceeded** - 46	TBD
Endpoint Target	Installation of 100 MW cumulative of new generation capacity in Indian Country by 2030.				
Documentation, Limitations, Methodology, Validation, and Verification	Methodology involves tracking the estimated installed generation based on proposed system capacity provided in grant applications and updated based on actual installed generation capacity per the grant final reports.				

Program	Indian Energy				
Performance Goal (Measure)	**Savings** - Increase energy cost savings to tribal communities co-funded by the Office of Indian Energy over the life of the installed generation system or efficiency measures (cumulative beginning in FY 2019, $M)				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	$ 250 million	$ 400 million	$ 200 million	$ 300 million	$ 400 million
Result	**Not Met** - 89.4	**Not Met** - 152.2	**Met** - 200.8	**Exceeded** - 425	TBD
Endpoint Target	Cumulative energy cost savings to funded tribal communities over the life of the installed generation systems of more than $2 billion dollars by 2030.				
Documentation, Limitations, Methodology, Validation, and Verification	Methodology involves tracking the estimated savings estimated in grant applications and updated based on actual savings documented in the final grant reports after the mandatory 12-month verification period.				

Strategic Objective 21. Support diversity and equity among researchers, projects, entrepreneurs, and the National Laboratories

Strategic Goal Measures:

- Enhance Tribal Loan Guarantee program to ensure successful access to program resources.
- Enhance Tribal and Native Alaskan clean energy assets through deployment activities.
- FY24: LPO conditionally committed to and closed an up to $72.8M partial loan guarantee to finance the development of a solar-plus long-duration energy storage microgrid on the Tribal lands of the Viejas Band of the Kumeyaay Indians near Alpine, California. This was the first ever project to be offered financing through the Tribal Energy Financing Program (TEFP). LPO continues to expand its outreach to tribes through a strong external engagement plan and in-person meetings throughout 2024, processing billions of dollars in the pipeline for TEFP.

Strategic Goal Measure: Enhance Tribal and Native Alaskan clean energy assets through deployment activities.

- OCED has awarded nineteen projects to enhance Tribal and Native Alaskan clean energy assets. OCED also published a "Federal Energy Funding for Rural and Remote Areas: A Guide for Communities".

Strategic Goal Measure: By end of FY 2022, increase outreach efforts to entities and individuals historically underrepresented in the SC research portfolio, including Historically Black Colleges and Universities (HBCU), Tribal Colleges and Universities (TCU), Minority Serving Institutions (MSI's), and those in underrepresented and disadvantaged communities.

- Building on the FY 2022 progress, the Office of Science continued to expand its outreach to students, faculty, and researchers from backgrounds and institutions historically underrepresented in the programs and opportunities sponsored by the Office of Science Programs. In FY 2024, the Office of Science launched a series of Program Office Hours for faculty, researchers, research administrators, and educators to broaden awareness of the programs' sponsored opportunities, to connect them with program managers, and to answer questions on how to apply to funding opportunities. The Office of Science held over fifty office hour sessions in FY 2024. In addition, the Office of Science's senior managers and staff and DOE national laboratory senior managers partnered to engage in a series of visits to HBCUs, TCUs, and other MSIs across the country to learn about faculty and student research and career interests, share information about sponsored opportunities, and identify areas where faculty can partner with the DOE labs.

Strategic Goal Measure: In first quarter FY 2023, organize and coordinate implementation of annual cross-cutting program office challenge geared towards HBCUs, TCUs, and MSIs.

- In FY 2023, as a partial result from strengthened and expanded educational outreach to research capacity with HCBUs, TCUs, and MSIs in NNSA mission areas of interest Defense Programs collaborations with these entities resulted in 592 internships and support to 1122 Minority Serving Institution Partnership (MSIPP) students.

Departmental Administration

Program	Departmental Administration				
Performance Goal (Measure)	**Maintain certified acquisition professionals** - Maintain levels of certified acquisition professionals				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	85 %	85%	85%	85%	85%
Result	**Exceeded** - 94	**Exceeded** - 94	**Exceeded** - 92	**Exceeded** - 92	TBD
Endpoint Target	Achieve certification levels of at least 90% for acquisition professionals.				

Goal 6: Advance Clean-Up of Radioactive and Chemical Waste

Strategic Objective 22. Support environmental remediation

Strategic Goal Measure: Advance the EM tank waste mission by initiating treatment of sodium bearing waste at Idaho in FY 2022, initiating treatment of tank waste at Hanford in FY 2024, and ramping up processing of salt solution waste at the Savannah River Site Salt Waste Processing Facility up to 9 million gallons per year by FY 2025.

- Idaho: Since startup in April 2023, IWTU has treated approximately 115 thousand gallons of tank waste (> 12% total volume) through end-FY 2024
- Hanford: In FY 2022, the Tank-Side Cesium Removal (TSCR) System was operationalized, and treatment of tank waste was initiated. In FY 2024, maintained Melter 1 and Melter 2 glass pool at operational level and temperature, added tuning feed to Melter 1, and established first cold cap.
- SRS: Since the start of SWPF operations in October 2020 through end-FY 2024, approximately 9.95 million gallons (over 24M curies) have been processed. In FY 2024, SWPF processed approximately 2.81 million gallons (nearly 11M curies) of tank waste.

Strategic Goal Measure: Disposition 30 shipments in FY 2022 and 40 shipments in years FY 2023-2026 of transuranic waste at the Waste Isolation Pilot Plant from the EM-LA site inventory.

- EM-LA is on track to complete 150 TRU shipments to WIPP during FY 2022-2025. As of end-FY 2024, 133 shipments have been completed.
    - FY 2022: 52 shipments
    - FY 2023: 59 shipments
    - FY 2024: 22 shipments

Strategic Goal Measure: Complete the demolition of key former nuclear processing facilities, including the first of the three former enrichment process buildings at the Portsmouth site by FY 2025; and the Main Plant Process Building, the last major facility at West Valley, by FY 2026. Post-demolition cleanup and waste removal for the High Flux Beam Reactor Exhaust stack at the Brookhaven National Laboratory will be completed by the end of FY 2022, resulting in EM mission completion at its 92nd cleanup site.

- Portsmouth: Completed 100% of the demolition of Building X-326 on June 10, 2022.
- West Valley: Since the start of the project in September FY 2022, approximately 22 thousand total tons of MPPB demolition waste have been shipped. EM is on track to complete the above-grade demolition of the MPPB by end-FY 2025.
- Brookhaven: EM completed the demolition and removal of the High Flux Beam Reactor Exhaust stack at the Brookhaven National Laboratory in New York in FY 2022, marking the end of legacy cleanup activities at that site.

Strategic Goal Measure: Complete disposition of the R-114 refrigerant at Paducah by the end of FY 2026.

- At Paducah, EM has completed disposition of 68 percent of R-114 refrigerant (approximately 5.8 million out of 8.5 million pounds) since the start of the project in September 2020 and is scheduled to complete disposition by end-FY 2027.

Strategic Goal Measure: Complete demolition of key excess facilities, such as the LLNL Building 280 Livermore Pool Type Reactor by FY 2026.

- At LLNL:
  - Completed the LS377 Slab/Soil Removal Project which returns the first EM completed site to NNSA for future mission use;
  - Completed the Building 251 pre-demolition abatement and hazard removal activities (an EM CY 2024 Priority);
  - Commenced the LS175 Slab/Soil removal project;
  - Continued the Building 280 demolition project;
  - Commenced the Building 281 demolition project; and
  - Continued the LS412 slab/soil removal project.

Strategic Goal Measure: Continue remediation of soil and groundwater at EM sites, including completing soil remediation at the East Tennessee Technology Park by FY 2025 and removing the remaining uranium mill tailings from Moab by the end of FY 2026.

- In FY 2024, OREM completed field remediation work at ETTP, more than a year ahead of the FY 2025 goal.
- At Moab, since the start of the project in April 2009, approximately 14.9 million tons of tailings were disposed through end-FY 2024.

Nuclear Materials and Tank Waste

Program	Nuclear Materials and Tank Waste				
Performance Goal (Measure)	**Liquid Waste Eliminated** - Increase the cumulative volume of radioactive liquid waste (including other forms such as sludge) eliminated from inventory.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	9,671 thousand gallons	9,117 thousand gallons	10,288 thousand gallons	10,825 thousand gallons	12,717 thousand gallons
Result	**Not Met** - 7,756	**Not Met** - 8,658	**Not Met** - 9,420	**Not Met** - 10,665	**Not Met** - 11,717
Endpoint Target	This metric has a life cycle estimate of 102,095 thousands of gallons eliminated from inventory.				
Commentary on 2024 Results (Action Plan if Not Met)	DWPF continued in September with maintenance for a pressure transmitter, infrared camera target in the melt cell, and inner canister closure station repair exacerbated by crane maintenance. The end of the month was shut down due to hurricane Helene. Saltstone operations were feed limited to 35% of forecast but used the downtime to replace grout pump and Saltstone hopper overflow container (SHOC) hoses, camera dome replacements, and radar, as well as replace valves on silos 3 and 4. **Action Plan:** Liquid waste facilities are being brought back online as quickly as possible to resume normal operations. Repairs and maintenance done during this period should facilitate operations in the future.				

Program	Nuclear Materials and Tank Waste				
Performance Goal (Measure)	**Liquid Waste Tanks Closed** - Increase the cumulative number of liquid waste tanks closed.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	15 tanks closed	15 tanks closed	15 tanks closed	15 tanks closed	15 tanks closed
Result	**Met** - 15	**Met** - 15	**Met** - 15	**Met** - 15	**Met** - 15
Endpoint Target	This metric has a life cycle estimate of 239 tanks closed.				
Commentary on 2024 Results (Action Plan if Not Met)					
Comment	The target for this metric has not increased from the prior year as no tank closures are planned in FY 2022. Progress toward increasing the number of liquid waste tanks closed extends beyond FY 2024.				

Program	Nuclear Materials and Tank Waste				
Performance Goal (Measure)	**Depleted and Other Uranium (DU&U) Packaged for Disposition** - Increase the cumulative amount of DU&U packaged in a form suitable for disposition				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	137,063 metric tons	144,190 metric tons	144,190 metric tons	147,339 metric tons	153,999 metric tons
Result	**Not Met** - 112,690	**Not Met** - 112,690	**Not Met** - 115,839	**Not Met** - 122,499	**Not Met** - 133,689
Endpoint Target	This metric has a life cycle estimate of 838,031 metric tons of DU & U packaged for disposition.				
Commentary on 2024 Results (Action Plan if Not Met)	Annual targets for this performance measure have been based on the engineering design's expected "throughput" of this one-of-a-kind project. Since assuming steady state conversion operations, the project has required higher than anticipated down times (individual conversion lines as well as multiple conversion lines) to perform maintenance activities, equipment/material changes, process flow enhancements, and engineered plant upgrades necessary to safely increase facility production levels. **Action Plan:** The Department is updating the federal site lifecycle estimate (baseline), which will establish demonstrated production rates/annual targets consistent with operational experience and capabilities of the facilities along with accounting for the already implemented and planned future plant modifications.				

Program	Nuclear Materials and Tank Waste				
Performance Goal (Measure)	**Spent Nuclear Fuel Packaged for Final Disposition** - Increase the cumulative amount of heavy metal mass of spent nuclear fuel packaged and ready for final disposition.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	2,132.54 metric tons of heavy metal	2,132.13 metric tons of heavy metal	2,132.44 metric tons of heavy metal	2,132.9 metric tons of heavy metal	2,133.35 metric tons of heavy metal
Result	**Not Met** - 2,131.58	**Not Met** - 2,132.02	**Met** - 2,132.45	**Exceeded** - 2,132.97	**Exceeded** - 2,137.35
Endpoint Target	This metric has a life cycle estimate of 2,451 metric tons of heavy metal mass of spent nuclear fuel packaged and ready for final disposition.				

Program	Nuclear Materials and Tank Waste
Performance Goal (Measure)	**High Level Waste Packaged for Final Disposition** - Increase the cumulative number of high-level waste canisters packaged for disposition.

Fiscal Year	2020	2021	2022	2023	2024
Target	4,563 canisters of high level waste	4,605 canisters of high level waste	4,650 canisters of high level waste	4,706 canisters of high level waste	4,929 canisters of high level waste
Result	**Not Met** - 4,487	**Not Met** - 4,546	**Not Met** - 4,595	**Not Met** - 4,669	**Not Met** - 4,709
Endpoint Target	This measure has a life cycle estimate of 24,852 canisters packaged for disposition.				
Commentary on 2024 Results (Action Plan if Not Met)	Target was not met due to shutdowns for maintenance and repairs to the defense Waste Processing facility (DWPF), including maintenance for a pressure transmitter and infrared camera target in the melt cell, and repair of the inner canister closure station exacerbated by crane maintenance. DWPF was also shut down for a period due to hurricane Helene **Action Plan:** Liquid waste facilities are being brought on line as quickly as possible to resume operations.				

Waste Management

Program	Waste Management				
Performance Goal (Measure)	**Legacy and Newly Generated LLW and Mixed LLW Disposed** - Increase the cumulative amount of legacy and newly generated low-level and mixed low-level waste disposed.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	1,402,757 cubic meters	1,406,567 cubic meters	1,426,923 cubic meters	1,442,650 cubic meters	1,464,370 cubic meters
Result	**Not Met** - 1,391,015	**Met** - 1,411,748	**Exceeded** - 1,428,969	**Exceeded** - 1,446,560	**Exceeded** - 1,546,631
Endpoint Target	This metric has a life cycle estimate of 1,628,083 cubic meters disposed.				

Program	Waste Management				
Performance Goal (Measure)	**Transuranic Waste Dispositioned** - Increase the cumulative amount of transuranic (TRU) waste (consisting of Remote Handled TRU and Contact Handled TRU) dispositioned.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	108,793 cubic meters	108,991 cubic meters	110,171 cubic meters	111,679 cubic meters	112,628 cubic meters
Result	**Not Met** - 108,489	**Met** - 109,089	**Not Met** - 109,853	**Not Met** - 110,550	**Not Met** - 111,386
Endpoint Target	This metric has a life cycle estimate of 150,055 cubic meters of TRU waste dispositioned.				

Commentary on 2024 Results (Action Plan if Not Met)	The negative variance is due to several factors, including limitations on WIPP's ability to receive waste, insufficient overpack shipping containers, and insufficient CH TRU waste at Idaho certified for shipment to WIPP. **Action Plan:** WIPP and the shipping sites are working to address the issues.

Site Restoration

Program	Site Restoration				
Performance Goal (Measure)	**Nuclear Facilities Completed** - Increase the cumulative number of nuclear facilities completed.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	159 facilities	157 facilities	163 facilities	164 facilities	170 facilities
Result	**Not Met** - 156	**Met** - 161	**Not Met** - 162	**Exceeded** - 169	**Met** - 170
Endpoint Target	This metric has a life cycle estimate of 491 facilities completed.				

Program	Site Restoration				
Performance Goal (Measure)	**Industrial Facilities Completed** - Increase the cumulative number of industrial facilities completed.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	2,396 facilities	2,518 facilities	2,651 facilities	2,628 facilities	2,664 facilities
Result	**Met** - 2,451	**Met** - 2,532	**Not Met** - 2,615	**Exceeded** - 2,634	**Exceeded** - 2,667
Endpoint Target	This metric has a life cycle estimate of 4,271 facilities completed.				

Program	Site Restoration				
Performance Goal (Measure)	**Remediation Completed** - Increase the cumulative number of release sites remediated.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	9,070 release sites	9,083 release sites	9,101 release sites	9,188 release sites	9,151 release sites

Result	**Not Met** - 8,349	**Not Met** - 9,080	**Not Met** - 9,095	**Not Met** - 9,110	**Not Met** - 9,142
Endpoint Target	This metric has a life cycle estimate of 11,715 release sites remediated.				
Commentary on 2024 Results (Action Plan if Not Met)	Two of the 9 exposure units (totaling 60.82 acres) that were planned for FY2024 completion have received TDEC and EPA approval of the Phased Construction Completion Report and can now be claimed as complete for soil remedial action. Any additional actions will be addressed under the Main Plant Area groundwater ROD, but soils are complete. Field work remedial action for the remaining seven EUs is complete, but regulatory approval is not expected until FY25. These will be reforecast with the FY25 performance measure targets. **Action Plan:** Field work on the remaining sites has been completed; regulatory approval to complete the sites is expected in FY2025.				

Program	Site Restoration				
Performance Goal (Measure)	**Radioactive Facilities Completed** - Increase the cumulative number of radioactive facilities completed.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	601 facilities	603 facilities	611 facilities	615 facilities	620 facilities
Result	**Met** - 602	**Not Met** - 602	**Not Met** - 605	**Not Met** - 613	**Exceeded** - 624
Endpoint Target	This metric has a life cycle estimate of 956 facilities completed.				

Program	Site Restoration				
Performance Goal (Measure)	**Geographic Sites Completed** - Increase the cumulative number of sites completed.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	92 sites	92 sites	92 sites	91 sites	91 sites
Result	**Not Met** - 91	**Not Met** - 91	**Not Met** - 91	**Met** - 91	**Exceeded** - 92
Endpoint Target	This metric has a life cycle estimate of 107 geographic sites completed in their entirety.				
Comment	A site is completed when active remediation has concluded in accordance with the terms and conditions of the sites' cleanup agreements (e.g. Records of Decision and permits). Stewardship or non-EM activities may be ongoing after site completion.				

Legacy Management

Program	Legacy Management				
Performance Goal (Measure)	**Environmental Remedies** - Conduct surveillance and maintenance activities to ensure the effectiveness of cleanup remedies in accordance with legal agreements or identify sites subject to additional remedial action to ensure effectiveness at all sites within Legacy Management's responsibility. The sites within Legacy Management's responsibility includes sites that were remedied under the Formerly Utilized Sites Remedial Action Program (FUSRAP), Defense Decontamination and Decommissioning Program (D&D), Comprehensive Environmental Response, Compensation, and Liability Act of 1978 (CERCLA), Resource Conservation and Recovery Act (RCRA), Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA), and other sites.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	101 sites	= 101 Sites	= 103 Sites	= 102 Sites	= 104
Result	**Not Met** - 98	**Not Met** - 100	**Not Met** - 101	**Not Met** - 101	**Not Met** - 103
Endpoint Target	Inspections will continue indefinitely. Inspection of 100 percent of the sites will continue to be the goal.				
Commentary on 2024 Results (Action Plan if Not Met)	The Durita CO, Disposal Site did not transfer in FY 2024 due to the delay of the land withdrawal of 70 acres of federal land administered by BLM. BLM cites the cause of the delay as competing, higher priority actions taking precedence for BLM staff, which has resulted in delayed review of the withdrawal at BLM headquarters. The Durita site is expected to transfer in FY 2025. **Action Plan:** Once the withdrawal is finalized, LM will provide final documentation to the Nuclear Regulatory Commission for final acceptance, facilitating transition.				
Documentation, Limitations, Methodology, Validation, and Verification	LM Blue Book - The LM Site Management Guide that details of sites that have been transitioned to LM and when sites are scheduled to transition to LM. The LM Site Management Guide is the control document for all site count information.				

Program	Legacy Management				
Performance Goal (Measure)	**Surveillance and Maintenance Cost** - Reduce the cost of performing long-term surveillance and monitoring (LTS&M) activities while meeting all regulatory requirements to protect human health and the environment. Reduction is measured in percent from the life-cycle baseline. Goal is a 2 percent reduction below the baseline each year.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	≥ 2 Percent reduction	2% cost savings	≥ 2 Percentage Reduction	≥ 2 Percentage Reduction	≥ 2
Result	**Exceeded** - 7	**Met** - 2	**Exceeded** - 8.8	**Not Met** - 6.6	**Not Met** - 1.4
Endpoint Target	Achieve a 2 percent reduction below the baseline each year.				
Commentary on 2024 Results (Action Plan if Not Met)	**Action Plan:** The annual measure ended the fiscal year at 1.4% ($750K) above the LTS&M Baseline of $52.7M, which was primarily due to the of UMTRCA Site Management Support being greater than budgeted cost due to non-project/non-site related requirements for support such as training, meetings, programmatic and administrative reporting, and data calls associated with other emergent work.				
Documentation, Limitations, Methodology, Validation, and Verification	LM Blue Book - The LM Site Management Guide that details of sites that have been transitioned to LM and when sites are scheduled to transition to LM. The LM Site Management Guide is the control document for all site count information.				

Goal 7: Operational Excellence

Strategic Objective 23. Attract, manage, train, and retain the best federal workforce to meet future mission needs

Clean Energy Demonstrations

Program	Clean Energy Demonstrations				
Performance Goal (Measure)	**Attract and Retain A Qualified Leadership Team** - Maintain OCED Leadership staffing				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	N/A	N/A	90 Percent
Result	N/A	N/A	N/A	N/A	**Met** - 90
Endpoint Target	On an ongoing basis, maintain a staffing level of at least 90% of the planned OCED leadership FTEs, defined as all OCED supervisory positions. This does not include political appointees.				
Commentary on 2024 Results (Action Plan if Not Met)	OCED met the 90% metric, and the final SES vacancy had a selection prior to the end of the fiscal year.				
Documentation, Limitations, Methodology, Validation, and Verification	DOEInfo. Calculated as # of leadership staff on-board divided by the total OCED leadership positions (excluding political appointees). Staff who are Acting in a Leadership position are not counted in the numerator of leadership staff on-board. On an ongoing basis, maintain a staffing level of at least 90% of the planned OCED leadership FTEs, defined as all OCED supervisory positions. This does not include political appointees. No known limitations. Validation and documentation are based on DOEInfo HR system of record.				

Departmental Administration

Program	Departmental Administration				
Performance Goal (Measure)	**Retention of a high performing workforce** - Increase the retention of a high performing workforce				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	≤ 36 % of all attrition is made up of High Performing Employees	≤ 36 % of all attrition is made up of High Performing Employees	≤ 34 % of all attrition is made up of High Performing Employees	≤ 34 % of all attrition is made up of High Performing Employees	≤ 34 % of all attrition is made up of High Performing Employees
Result	**Met** - 32.04	**Met** - 31	**Met** - 27.38	**Not Met** - 34.33	**Met** - 33.2
Endpoint Target	High performing employees (employees rated Exceeds or Significantly Exceeds) comprise 34% or less of all annual attritions in FY 2025.				
Commentary on 2024 Results (Action Plan if Not Met)	In FY2024, only 33.2% of attrition for the Department of Energy was made up of high performing employees.				
Documentation, Limitations, Methodology, Validation, and Verification	This metric was generated by first sorting and categorizing the most recent annual performance scores for the personnel that separated from the DOE workforce over the fiscal year in question. Next, a count of the number of separated employees categorized as 'high performing' was generated (e.g., those employees that had a performance rating of either significantly exceeds expectations or exceeds expectations). Finally, the percentage of 'high performing employees' was calculated.				

Program	Departmental Administration				
Performance Goal (Measure)	**Increase Efficiency in Time-to-Hire** - Increase the percentage of hiring actions that meet the OPM 80-day End-to-End hiring model (this measure was new, beginning in FY2022).				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	≥ 30.5	≥ 30.5	N/A
Result	N/A	N/A	**Met** - 43.6	**Exceeded** - 61.1	**Met** - 61.2

Endpoint Target	Increase the percentage of hiring actions that meet the OPM 80-day End-to-End hiring model (this measure was new, beginning in FY2022).
Documentation, Limitations, Methodology, Validation, and Verification	The new metric was generated by calculating the time-to-hire for each hiring action (within the fiscal year examined), identifying the number of those actions that meet the 80-day goal and, finally, calculating that percentage within all hiring actions (for the fiscal year examined).

Program	Departmental Administration				
Performance Goal (Measure)	**Maintain certified acquisition professionals** - Maintain levels of certified acquisition professionals				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	85 %	85%	85%	85%	85%
Result	**Exceeded** - 94	**Exceeded** - 94	**Exceeded** - 92	**Exceeded** - 92	**Exceeded** - 90
Endpoint Target	Achieve certification levels of at least 90% for acquisition professionals.				

Federal Energy Management Program

Program	Federal Energy Management Program				
Performance Goal (Measure)	**Workforce Development** - Increase total hours of workforce development training provided by FEMP.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	43,000 hours	35,000 hours	42,000 hours	44,000 Training hours	47,000 Training Hours
Result	**Not Met** - 40,131.47	**Exceeded** - 45,751	**Not Met** - 7,611	**Met** - 65,511	**Met** - 63,568
Endpoint Target	50,000 training hours developed and offered by FEMP by 2025.				

Strategic Objective 24. Use taxpayer funds efficiently and effectively and improve visibility into how funds are being used

Strategic Goal Measure: Provide the American public an enhanced view of DOE funding.

- DOE regularly updates the Federal IT dashboard, enabling public view of IT funding and IT investments. These updates represent both IT and Operational Technology investments.

Strategic Goal Measure: Develop standardized report to inform DOE leadership of key execution data.

- DOE Office of the CIO conducts quarterly engagements with Departmental Elements to maintain situational awareness of IT funds execution. OCIO developed a standardized and interactive dashboard which provides an up-to-date view of execution data. Using the dashboard enables OCIO to provide DOE leadership with the data necessary to determine the effectiveness and efficiency of IT funds. Quarterly engagements provide insight in several areas of IT funding data including, TBM alignment, funding availability and CIO risk review status.

Strategic Goal Measure: Improve planning and budgeting processes to further the Department's mission.

- OCIO implemented automated processes within the IT Portfolio Management workflows that decreased number of manhours for repetitive tasks, realizing $80,000 in cost avoidance. These processes improved customer experience and enabled employees to optimize priority work.
- In addition, DOE continues to optimize investments and identify cost savings. As of August 2024, DOE identified $71.33M in cost savings and/or avoidance for FY24, of which $43.56M was savings directly associated with Enterprise-Wide Agreements (EWA). DOE CIO has pursued EWAs for widely used commercially available products and services on behalf of the department. This streamlines the acquisition process for IT procurements and decreases unit costs for the enterprise.

Strategic Goal Measure: Develop a public-facing dashboard to show where DOE funding is being applied and to highlight exceptional DOE projects and initiatives.

- DOE meets this requirement by updating the Federal IT dashboard monthly, enabling visibility of use of taxpayer funds for major IT investments. The Federal IT dashboard is a public facing, enabling the public to view status of all non-sensitive IT projects and investments.

Strategic Goal Measure: Provide to DOE leadership a detailed standardized report on a recurring basis that captures key execution data.

- OCIO improved IT portfolio transparency and data validation through one-on-one engagements with 10 Departmental Elements, covering 23.7% of the $4.2B IT portfolio.

Strategic Goal Measure: Improve the planning and budgeting processes to meet long term climate and national security goals.

- CIO issued FY2026 IT budgeting guidance to the Department to ensure planning and programming alignment with strategic goals and objectives. OCIO continued to mature IT acquisition review processes ensuring requirements and solutions are governed and align with the Department and OCIO's strategic goal.

Departmental Administration

Program	Departmental Administration				
Performance Goal (Measure)	**Project Management Success** - Complete 90% of the construction projects at the original scope and within 10% of cost baseline established at Critical Decision (CD)-2, approve performance baseline.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	90 %	90 %	90 %	90 %	90 %
Result	**Met** - 90	**Met** - 92	**Met** - 94	**Met** - 100	**Met** - 100
Endpoint Target	On a three-year rolling basis, complete at least 90% of departmental construction projects within the original scope baseline and not to exceed 110% of the cost as reflected in the performance baseline established at Critical Decision 2.				
Commentary on 2024 Results (Action Plan if Not Met)	Result: Achieved. For FY 2024, the result was 100%, exceeding the goal of 90%. During FY 2022-2024, DOE completed 17 capital asset projects with all 17 successfully completed at original scope and within 110% of the Total Project Cost (TPC) established at Critical Decision-2.				
Documentation, Limitations, Methodology, Validation, and Verification	Managed by the Project Controls and Policy Division within the Office of Project Management. Data Source: Maintained in the Department's central repository for key Departmental-level project information called the Project Assessment and Reporting System (PARS). Limitations: Data is not available until 45 days after the end of each quarter throughout the FY. Methodology: The analyst will query PARS for any capital asset project that achieved Critical Decision (CD)-4, Approve Start of Operations or Project Completion, over the past three fiscal years to determine project management success. The analyst will compare the delineated scope, cost, schedule, and key performance parameter criteria of CD-2, performance baseline, and CD-4, Approved Start of Operations or Project Completion, approval memorandums to determine success. Validation: Results are shared with the project's respective Program Office to review the assessment prior to publishing to ensure data were not missed that could impact a success rating. Verification: An assessed rating is verified to ensure it is underpinned by the appropriate documentation in PARS.				

Southeastern Power Administration

Program	Southeastern Power Administration				
Performance Goal (Measure)	**SEPA Repayment of Federal Power Investment** - Repayment of Investment Performance - Ensure unpaid investment (UI) is equal to or less than the allowable unpaid investment (AUI) in accordance with DOE Order RA 6120.2 and Reclamation Law.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	≤ 2,097 million dollars AUI	≤ 2,237 million dollars AUI	≤ 2,245 million dollars AUI	≤ 2,297 million dollars AUI	≤ 2,394 million dollars AUI
Result	**Met** - 1,638	**Met** - 1,628	**Met** - 1,630	**Met** - 1,640	TBD
Endpoint Target	Continue to meet legislated cost recovery requirements for timely repayment of Federal investment in maintaining financial integrity of projects/program.				
Documentation, Limitations, Methodology, Validation, and Verification	Rates and Repayment Statement of Project Revenue, Expenses and Repayment of Investment. Repayment statistics are compiled annually by projects from the most recent final power repayment study (PRS) developed by Rates/Power Marketing Offices using audited financial data. These studies identify project investment category totals for unpaid Federal investment (UI) and the amount of allowable unpaid Federal investment (AUI). AUI is the amount of investment for which repayment is not yet required based on the duration of the repayment period. Annual planned repayment estimates are developed in the PRS and are based on average hydrology that can vary greatly, impacting both revenue and expenses. Moreover, annual repayment of Federal investment in infrastructure/facilities isn't required but assumes repayment within the average service life up to a maximum of 50 years.				

Basic Energy Sciences

Program	Basic Energy Sciences				
Performance Goal (Measure)	**BES Construction/MIE Cost & Schedule** - Cost-weighted mean percentage variance from established cost and schedule baselines for major construction, upgrade, or equipment procurement projects				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	< 10 %	< 10 %	< 10 %	< 10 %	< 10 %
Result	**Met**	**Met**	**Met**	**Exceeded** - 7.5	**Met** - 9.7
Endpoint Target	Adhering to the cost and schedule baselines for a complex, large scale, science project is critical to meeting the scientific requirements for the project and for being good stewards of the taxpayers' investment in the project.				
Commentary on 2024 Results (Action Plan if Not Met)	The cost-weighted mean percentage variance for FY 2024 met the target. The variance for both cost and schedule is less than 10%: Cost (-9.7%); Schedule (-3.4%)				

Documentation, Limitations, Methodology, Validation, and Verification	BES Projects include those that have an approved performance baseline and funding at the start of FY 2024, which include: APS-U, PPU, ALS-U, NSRC-Recap, and NEXT-II. Supporting data reside in the DOE Office of Project Management Oversight and Assessment's Project Assessment and Reporting System-II (PARS-II) and with Basic Energy Science's Division of Scientific User Facilities. The EOY report is based on PARS-II data through the end of August and September. Supporting data reside in the DOE Office of Project Management Oversight and Assessment's Project Assessment and Reporting System-II (PARS-II) and with Basic Energy Science's Division of Scientific User Facilities. The EOY report is based on PARS-II data through the end of August and September.

Program	Basic Energy Sciences				
Performance Goal (Measure)	**BES Facility Operations** - Average achieved operation time of BES user facilities as a percentage of total scheduled annual operation time				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	≥ 90 %	≥ 90 %	≥ 90 %	≥ 90 %	≥ 90 %
Result	**Met** - 93	**Met** - 99	**Met** - 95	**Not Met** - 86	**Not Met** - 88
Endpoint Target	Many of the research projects that are undertaken at the Office of Science's scientific user facilities take a great deal of time, money, and effort to prepare and regularly have a very short window of opportunity to run. If the facility is not operating as expected the experiment could be ruined or critically setback. In addition, taxpayers have invested millions or even hundreds of millions of dollars in these facilities. The greater the period of reliable operations, the greater the return on the taxpayers' investment.				
Commentary on 2024 Results (Action Plan if Not Met)	Target Not Met. 88% (average annual operating at BES Facilities as a percentage of planned scheduled time, i.e., 21,606 actual hours delivered to users versus 24,593 total planned hours). Both APS and LCLS were unable to meet their annual targets for planned operating hours. In the case of LCLS, unplanned downtime resulted from multiple power outages affecting both the normal conducting and super conducting linac, with an additional outage impacting the normal conducting linac in Q4. Challenges with commissioning the superconducting linac further reduced the available time to users. For APS, delays in bringing the facility back online following the 12-month shutdown for installation of the new storage ring led to a reduced amount of time available for users relative to the projected schedule time at the start of FY 2024. **Action Plan:** Both APS and LCLS were unable to meet their annual targets for planned operating hours. In both cases, continued progress in commissioning the upgraded APS and LCLS is expected to allow for delivery of planned hours in FY 2025.				

Documentation, Limitations, Methodology, Validation, and Verification	Supporting documents consist of the required quarterly and annual reports submitted to BES by the BES user facilities at the completion of each quarter and at the end of the fiscal year. These final reports reside in the files of the Office of Basic Energy Sciences. The total planned operating hours for FY24 for this goal is obtained from the planned operating hours of these individual user facilities in FY24: National Synchrotron Light Source II (NSLS-II) 4,800; Stanford Synchrotron Radiation Lightsource (SSRL) 4,549; Advanced Light Source (ALS) 2,952; Advanced Photon Source (APS) 2,288; Linac Coherent Light Source (LCLS) 5,004; High Flux Isotope Reactor (HFIR) 3,400; and the Spallation Neutron Source (SNS) 1,600 for a total of 25,050 hours (90% is 22,545 hours).

Energy Information Administration

Program	Energy Information Administration				
Performance Goal (Measure)	**Timeliness of EIA Information Products** - Percentage of selected EIA recurring products meet their release date targets (all product types).				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	≥ 95 % of products released on schedule	≥ 95 % of products released on schedule	≥ 95 % of products released on schedule	≥ 95 % of products released on schedule	≥ 95 % of products released on schedule
Result	**Met** - 99	**Met** - 99	**Met** - 96	**Met** - 97	**Met** - 99
Endpoint Target	This is an ongoing annual performance measure, as timely delivery of energy information is central to EIA's mission.				
Commentary on 2024 Results (Action Plan if Not Met)	The target is met. 99% of recurring products met their scheduled release dates, 455 out of 458 products have been released on time. This exceeds the target of 95%.				
Documentation, Limitations, Methodology, Validation, and Verification	For a core set of recurring data and analytical products, EIA develops a release schedule at the beginning of the year and tracks the actual release dates on a weekly basis. EIA uses product archive URLs, email list release notifications, and web audit log applications as tools to verify release timing.				

Program	**Energy Information Administration**

Performance Goal (Measure)	Customer Satisfaction - Percentage of customers who are satisfied or very satisfied with the information on EIA's website				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	**N/A**	**N/A**	**N/A**	**≥ 80 % customer satisfaction**	**≥ 80 % customer satisfaction**
Result	**N/A**	**N/A**	**N/A**	**Met - 95**	**Met - 94**
Endpoint Target	**This is an ongoing annual performance measure, as customer satisfaction is central to EIA's mission.**				
Commentary on 2024 Results (Action Plan if Not Met)	**The target is met. EIA had 17,000 respondents for the FY2024 customer satisfaction survey. EIA received a positive customer satisfaction rate of 94%, exceeding our target of 80%.**				
Documentation, Limitations, Methodology, Validation, and Verification	**The data are collected through EIA's annual web customer survey. The measure has a target of 80% (4 and 5) on a 5-point Likert scale. Additionally, an "I don't know" option was added to the response set. EIA receives OMB approval to conduct the survey. Survey results are published on EIA's Intranet website, Inside EIA. The data files are managed by EIA's Office of Stakeholder Outreach and Communications and reviewed by EIA's Project Management Office.**				

Departmental Administration

Program	Departmental Administration				
Performance Goal (Measure)	**Protect - Identity Management** - Implement federated identity management supporting EO 14028 Zero Trust objectives integrating identity sources across DOE providing a single identity database of for all permanent DOE staff.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	= 100 %	100	100	95	95
Result	**Not Met** - 94	**Not Met** - 98	**Not Met** - 93	**Met** - 95	**Met** - 95
Endpoint Target	Obtain performance of 100% of all identities for permanent staff across DOE contained in the linked to OneID identity database by FY 2019 and maintain annually thereafter.				
Commentary on 2024 Results (Action Plan if Not Met)	The FY24 target of 95% for implementing a federated identity management infrastructure linking identity sources across DOE to OneID was reached.				

Program	Departmental Administration				
Performance Goal (Measure)	**Protect – Multifactor Authentication for Applications** - Conduct a risk based assessment consistent with Digital Identity Risk Assessment (DIRA) for all enterprise applications within unclassified FISMA high and moderate systems, identify the proper credential for each role within the application in accordance with the revised NIST 800-63 standard, and require the use of the proper credential for access to the application directly or through federation with the departmental access management service.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	≥ 60 %	80	80	80	85
Result	**Exceeded** - 65	**Not Met** - 78	**Not Met** - 78	**Not Met** - 76	**Not Met** - 65
Endpoint Target	Require the credential identified through the role-based risk assessment for 80% of all applications within unclassified FISMA high and moderate systems by FY 2022 and maintain annually thereafter.				
Commentary on 2024 Results (Action Plan if Not Met)	The FY24 EOY target was not met with only 65% achieved based on FISMA reporting. DOE has many FIMSA systems consist of application used to manage Operational Technology (OT). A significant number of these OT applications have no method to implement MFA. The combination of IT and OT creates a major technical hurdle that is dependent of refresh cycles for OT which are often 10 to 15 years or more. **Action Plan:** Completion of MFA for the applications with the corporate systems will be completed in Q2 FY 25 which will substantially elevate the level of MFA for IT applications which will in turn elevate the MFA requirement for FISMA systems. Although there is a 1:1 match between corporate systems and applications supporting corporate system, there are a small number where a system consists of multiple applications.				

Program	Departmental Administration				
Performance Goal (Measure)	**Protect – Multifactor Authentication for Systems** - MFA is required to access externally accessible unclassified FISMA high, and FISMA moderate systems where technically feasible in support of EO 14028.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	85 %	85	85	85	90
Result	**Met** - 85	**Not Met** - 78	**Not Met** - 61	**Not Met** - 58	**Not Met** - 65
Endpoint Target	Achieve an MFA performance of 100% for Unprivileged Network Accounts by FY 2022 and maintain annually thereafter for externally accessible FISMA high and moderate systems where technically feasible.				
Commentary on 2024 Results (Action Plan if Not Met)	The FY24 EOY target was not met with only 65% achieved based on FISMA reporting. Many systems are comprised of more than one application. Meeting this objective requires that all applications within a system require MFA with no exception, i.e. if 9 of 10 applications within a system require MFA then the system does not yet require MFA. This is the primary reason why MFA for applications is significantly higher than MFA for systems. DOE has many FISMA systems which manage Operational Technology (OT). A significant number of OT systems are legacy with no method to implement MFA. The combination of IT and OT creates a major technical hurdle that is dependent of refresh cycles for OT which are often 10 to 15 years or more. **Action Plan:** Completion of MFA for corporate systems will be completed in Q2 FY 25 which will substantially elevate the level of MFA for IT systems.				

Program	Departmental Administration				
Performance Goal (Measure)	**Protect – Standards Based Application Access** - Implement single signon to applications directly or through federation with the DOE enterprise access management service.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	≥ 95 %	95	95	= 248 Number	398
Result	**Met** - 95	**Met** - 95	**Met** - 95	**Exceeded** - 338	**Met** - 514
Endpoint Target	Increase standards-based federated access to applications adding 15 applications/environments quarterly.				
Commentary on 2024 Results (Action Plan if Not Met)	The FY24 EOY target for maintaining a standards based federated access management infrastructure across DOE to enable a single sign-on was met.				

Other Defense Activities

Program	Other Defense Activities				
Performance Goal (Measure)	**Former Worker Satisfaction** - Obtain an average rating of no less than satisfactory on 90 percent of customer satisfaction surveys from former worker medical screening program participants who receive medical screenings.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	90 percent satisfactory rating on customer satisfaction surveys	90 percent satisfactory rating on customer satisfaction surveys	90 percent satisfactory rating on customer satisfaction surveys	90 percent satisfactory rating on customer satisfaction surveys	90
Result	**Met** - 97.75	**Met** - 97.8	**Met** - 98.7	**Met** - 99.3	**Exceeded** - 98.6
Endpoint Target	Achieve 90% satisfactory rating on customer satisfaction surveys annually.				
Commentary on 2024 Results (Action Plan if Not Met)					
Documentation, Limitations, Methodology, Validation, and Verification	Analysis of collected survey forms indicates an EOY result of 98.8% of customers rated service satisfactory or better; therefore, no changes in the screening program are required.				

Western Area Power Administration

Program	Western Area Power Administration				
Performance Goal (Measure)	**WAPA Operating Cost** - Annual Operating Cost Performance: Provide power at the lowest possible cost by keeping total operation and maintenance cost per kilowatt-hour generated at or below the National median for public power for 100+ customers.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	≤ 0.056 $/kWh	≤ 0.062 $/kWh	≤ 0.061 $/KWh	≤ 0.05 $/KWh	≤ 0.061 $/KWh
Result	**Met** - 0.012	**Met** - 0.015	**Met** - 0.019	**Met** - 0.019	**Exceeded** - 0.028
Endpoint Target	Control annual Operations and Maintenance costs, thereby providing power at the lowest possible cost.				
Commentary on 2024 Results (Action Plan if Not Met)					
Comment	Due to the seasonal nature of hydropower generation throughout the fiscal year, a rolling 1-year total will be calculated for both Operating & Maintenance (O&M) expense information as well as Net Generation. O&M data is obtained through the financial management system, while generation data is compiled from the power operations reports of each contributing generating agency. The annual target for each performance reporting cycle is determined by referencing the latest annual report on financial and operating ratios as published by the American Public Power Association (APPA). Specifically, WAPA will refer to the "Median Values by Customer Size Class" table. The APPA compiles benchmark information from both a survey instrument and data residing with the Energy Information Administration.				
Documentation, Limitations, Methodology, Validation, and Verification	Due to the seasonal nature of hydropower generation throughout the fiscal year, a rolling 1-year total will be calculated for both Operating & Maintenance (O&M) expense information as well as Net Generation. O&M data is obtained through the financial management system, while generation data is compiled from the power operations reports of each contributing generating agency. The annual target for each performance reporting cycle is determined by referencing the latest annual report on financial and operating ratios as published by the American Public Power Association (APPA). Specifically, WAPA will refer to the "Median Values by Customer Size Class" table. The APPA compiles benchmark information from both a survey instrument and data residing with the Energy Information Administration.				

Southwestern Power Administration

Program	Southwestern Power Administration
Performance Goal (Measure)	**SWPA Repayment of Investment Performance** - Ensure unpaid investment (UI) is equal to or less than the allowable unpaid investment (AUI) in accordance with DOE Order RA 6120.2 and Reclamation Law.

Fiscal Year	2020	2021	2022	2023	2024
Target	≤ 1,386 million in AUI	≤ 1,502 million in AUI	≤ 1,563 million in AUI	≤ 1,656 million in AUI	≤ 1,676 million in AUI
Result	**Met** - 225.8	**Met** - 234.7	**Met** - 347.1	TBD	TBD
Endpoint Target	Continue to meet legislated cost recovery requirements for timely repayment of Federal investment in maintaining financial integrity of projects/program.				
FY 2024 Note	AUI values are as follows based on each year's final PRSs:				
	FY2020 - $1,386 – 2020 PRSs FY2021 - $1,423 – 2021 PRSs FY2022 - $1,414 - 2022 PRSs				
Documentation, Limitations, Methodology, Validation, and Verification	Values for Target (allowable unpaid investment) and Result (estimated/actual unpaid investment) provided annually by the Division of Resources and Rates from the most recent Power Repayment Studies (PRSs) for each of our three rate systems. • Target-The AUI is the sum of the Allowable Balance in each rate system PRS for the indicated FY. The PRS Allowable Balance is the sum of all annual investments allowed to remain unpaid as of the end of the FY; each investment's allowable unpaid period is based on when it is placed in operation and the applicable repayment period (up to 50 years). • Result-The UI is the sum of the Balance to Be Repaid for each rate system PRS for the indicated FY. The PRS Balance to Be Repaid is the sum of all remaining investment to be repaid as of the end of the FY. • Actual investment data is obtained from Southwestern's financial statements and the U.S. Army Corps of Engineers' (Corps) financial statements, through the Southwestern Federal Power (SWFPS) combined financial statement audit process. • The estimated future investment data for Southwestern investments is obtained from Southwestern's budget and capital replacements plans; The estimated future investment data for the Corps is obtained from the Corps' 5-year capital projects plans and master list of major equipment replacements. These estimates are provided to Southwestern's Division of Resources and Rates as part of the annual PRS process. • Finalized actual investment data is available only after the SWFPS combined financial statement audit process is complete. • Estimated future investment data is dependent upon the accuracy of estimates provided by the various Southwestern and Corps sources. • Verification and validation occur throughout the FY financial audit of the SWFPS combined financial statements, as the financial data provided by the various Southwestern and Corps sources during the annual PRS process is cross-checked with financial statements.				

Departmental Administration

Program	Departmental Administration				
Performance Goal (Measure)	**Achieve Cost-Savings** - Promote management and operational excellence by streamlining operations and reducing costs. Promote a corporate approach (including the National Laboratories) for moving from a transactional strategic sourcing approach to a more robust Category Management concept to achieve at least a 4% cost savings/avoidance target against actionable procurement spending on products and services through the increased utilization of Best-in-Class (BIC) vehicles				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	$ 386 M Cost Savings	$ 386 M Cost Savings	$511.40 M Cost Savings	$511.40 M Cost Savings	$641.8M Cost Savings
Result	**Met**	**Exceeded** - 607.24	**Exceeded** - 656.6	**Exceeded** - 922.9	TBD
Endpoint Target	Annually achieve 4% cost savings target against actionable procurement spend on products and services.				

Western Area Power Administration

Program	Western Area Power Administration				
Performance Goal (Measure)	**WAPA - Repayment of Investment Performance** - Ensure unpaid investment (UI) is equal to or less than the allowable unpaid investment (AUI) in accordance with DOE Order RA 6120.2 and Reclamation Law.				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	≤ 8.534 billion dollars AUI	≤ 8.774 billion dollars AUI	≤ 8.873 billion dollars AUI	≤ 8.465 billion dollars AUI	≤ 8.743 billion dollars AUI
Result	**Met** - 5.186	**Met** - 4.775	**Met** - 4.822	**Met** - 4.81	**Exceeded** - 4.49
Endpoint Target	Continue to meet legislated cost recovery requirements for timely repayment of Federal investment in maintaining financial integrity of projects/program.				
Documentation, Limitations, Methodology, Validation, and Verification	The Rates Managers track it from the Power Repayment Studies.				

Strategic Objective 25. Monitor Departmental Performance to Ensure That Program Activities Are Executed in a Safe and Secure Manner Consistent with Departmental Direction

Accelerator R&D and Production

Program	Accelerator R&D and Production				
Performance Goal (Measure)	**ARDAP Facility Operations** - Average achieved operation time of ARDAP user facilities as a percentage of total scheduled annual operation time				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	N/A	≥ 80 %	≥ 80 %	≥ 80 %
Result	N/A	N/A	**Met** - 109.6	**Exceeded** - 106	**Exceeded** - 121
Endpoint Target	Many of the research projects that are undertaken at the Office of Science's scientific user facilities take a great deal of time, money, and effort to prepare and regularly have a very short window of opportunity to run. If the facility is not operating as expected the experiment could be ruined or critically setback. In addition, taxpayers have invested millions or even hundreds of millions of dollars in these facilities. The greater the period of reliable operations, the greater the return on the taxpayers' investment.				
Commentary on 2024 Results (Action Plan if Not Met)	Target met. ATF provided a total of 2,531 user beamtime hours, or 121% of the initial projection of 2,100 hours.				
Documentation, Limitations, Methodology, Validation, and Verification	The total planned operating hours for ATF (Accelerator Test Facility) is 2,100 hours (80% is 1,680 hours). Quarterly: Emails from BNL (ATF) management to ARDAP Office. EOY: Official letters from BNL (ATF) management to ARDAP Office reporting and certifying annual achieved operation time of the user facility (per documented control process). Documentation resides in the Office of Accelerator R&D and Production files. This target is met when the total operating time is 80% or greater.				

Advanced Scientific Computing Research

Program	Advanced Scientific Computing Research				
Performance Goal (Measure)	**ASCR Facility Operations** - Average achieved operation time of ASCR user facilities as a percentage of total scheduled annual operation time				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	≥ 90 %	≥ 90 %	≥ 90 %	≥ 90 %	≥ 90 %
Result	**Met** - 98.2	**Met** - 99.3	**Met** - 99.4	**Exceeded** - 99.1	**Exceeded** - 99.6
Endpoint Target	Many of the research projects that are undertaken at the Office of Science's scientific user facilities take a great deal of time, money, and effort to prepare and regularly have a very short window of opportunity to run. If the facility is not operating as expected the experiment could be ruined or critically setback. In addition, taxpayers have invested millions or even hundreds of millions of dollars in these facilities. The greater the period of reliable operations, the greater the return on the taxpayers' investment.				
Commentary on 2024 Results (Action Plan if Not Met)	In FY24, ASCR facilities delivered an average of 99.6% of scheduled hours to researchers across the Nation - OLCF's Frontier exascale computing system delivered 100% (8,603*) of the scheduled 7,008 wall clock hours; ALCF's Polaris pre-exascale compute system, delivered 100% (8,741.9*) of the scheduled 8,585 wall clock hours; Perlmutter, a High-Performance Production computing system, delivered 98.8% (8,485.03) of the scheduled 8,585 wall clock hours. *Note: Frontier and Polaris are limiting scheduled downtime to support ECP, INCITE, and ALCC allocations until Aurora acceptance is achieved.				
Documentation, Limitations, Methodology, Validation, and Verification	Quarterly and EOY: This data comes directly from the batch queue accounting system at the National Energy Research Scientific Computing (NERSC) facility, Oak Ridge Leadership Computing Facility (OLCF), and Argonne Leadership Computing Facility (ALCF). The number of unavailable CPU hours are accounted for by system failures and other unscheduled downtime. Reports detailing this progress reside in the files of the ASCR Office.				

Fusion Energy Sciences

Program	Fusion Energy Sciences				
Performance Goal (Measure)	**FES Facility Operations** - Average achieved operation time of FES user facilities as a percentage of total scheduled annual operation time				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	≥ 90 %	≥ 90 %	≥ 90 %	≥ 90 %	≥ 90 %
Result	**Not Met** - 24	**Met** - 104	**Met** - 102	**Exceeded** - 99	**Exceeded** - 104
Endpoint Target	Many of the research projects that are undertaken at the Office of Science's scientific user facilities take a great deal of time, money, and effort to prepare and regularly have a very short window of opportunity to run. If the facility is not operating as expected the experiment could be ruined or critically setback. In addition, taxpayers have invested millions or even hundreds of millions of dollars in these facilities. The greater the period of reliable operations, the greater the return on the taxpayers' investment.				
Commentary on 2024 Results (Action Plan if Not Met)	Target met. DIII-D completed 14.6 weeks (584 hours) of operations, slightly exceeding the operations target due to higher-than-expected levels of availability.				

High Energy Physics

Program	High Energy Physics				
Performance Goal (Measure)	**HEP Construction/MIE Cost & Schedule** - Cost-weighted mean percentage variance from established cost and schedule baselines for major construction, upgrade, or equipment procurement projects				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	< 10 %	< 10 %	< 10 %	< 10 %	< 10 %
Result	**Met**	**Met**	**Met**	**Met** - 10	**Met** - 2
Endpoint Target	Adhering to the cost and schedule baselines for a complex, large scale, science project is critical to meeting the scientific requirements for the project and for being good stewards of the taxpayers' investment in the project.				

Commentary on 2024 Results (Action Plan if Not Met)	Target Met. The weighted cost variance was -2.25 and the weighted schedule variance was -2.0%.
Documentation, Limitations, Methodology, Validation, and Verification	Cost and schedule variance calculated by Earned Value for each project is averaged, weighted by the Total Project Cost for that project. The EOY report is based on PARS II data through the end of August. Supporting data reside in the DOE Office of Project Management Oversight and Assessment's Project Assessment and Reporting System-II (PARS-II), with the supporting documentation residing in the files of the HEP Office.

Program	High Energy Physics				
Performance Goal (Measure)	**HEP Facility Operations** - Average achieved operation time of HEP user facilities as a percentage of total scheduled annual operation time				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	≥ 80 %	≥ 80 %	≥ 80 %	≥ 85 %	≥ 85 %
Result	**Not Met** - 68	**Met** - 99	**Met** - 108	**Not Met** - 47	**Exceeded** - 97
Endpoint Target	Many of the research projects that are undertaken at the Office of Science's scientific user facilities take a great deal of time, money, and effort to prepare and regularly have a very short window of opportunity to run. If the facility is not operating as expected the experiment could be ruined or critically setback. In addition, taxpayers have invested millions or even hundreds of millions of dollars in these facilities. The greater the period of reliable operations, the greater the return on the taxpayers' investment.				
Commentary on 2024 Results (Action Plan if Not Met	Target Met. The combined Fermilab Accelerator Complex and FACET II achieved 5618 run hours in FY2024 which exceeded the HEP target of 85% of 5780 hours which is 4913 hours. The Fermilab Accelerator Complex achieved 1940 run hours in FY2024 which exceeded the HEP target of 85% of 2240 hours which is 1904 hours. FACET II achieved 3678 hours in FY2024 which exceeded the HEP target of 85% of 3540 hours which is 3009 hours.				
Documentation, Limitations, Methodology, Validation, and Verification	Derived from letters from Lab Directors or designee. Fermi data are reported at http://programplanning.fnal.gov/quarterly-accelerator-operations-reports/. The scientific user facilities and scheduled hours: - Total hours scheduled is 5780 (4913 hours is 85%). - Fermilab Accelerator Complex is scheduled to run 2240 hours in FY 2024 1904 is 85%). - FACET II (Facility for Advanced Accelerator Experimental Tests) is scheduled to run 3540 hours in FY2024 3009 is 85%) Unscheduled downtime reported by each facility is averaged, weighted by the Facility Operations cost. Facility Operations costs are defined in the Facilities Summary section of the HEP budget submission.				

Nuclear Physics

Program	Nuclear Physics				
Performance Goal (Measure)	**NP Construction/MIE Cost & Schedule** - Cost-weighted mean percentage variance from established cost and schedule baselines for major construction, upgrade, or equipment procurement projects				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	N/A	< 10 %	< 10 %	< 10 %	< 10 %
Result	N/A	**Met**	**Met**	**Met** - 5	**Met**
Endpoint Target	Adhering to the cost and schedule baselines for a complex, large scale, science project is critical to meeting the scientific requirements for the project and for being good stewards of the taxpayers' investment in the project.				
Commentary on 2024 Results (Action Plan if Not Met)	Target met. GRETA is making good progress toward completion with both CPI and SPI being 95% or higher throughout the year. The project advanced from 75% to 84% complete during the year. CD-4A is expected in May of 2025.				
Documentation, Limitations, Methodology, Validation, and Verification	NP projects include those that have an approved performance baseline at the start of FY 2024, which include: GRETA Results are derived from the Monthly Report preceding the end of the quarter for each project. Cost and schedule variance calculated by Earned Value for each project is averaged, weighted by the Total Project Cost for that project. The supporting data reside in the DOE Office of Project Management Oversight and Assessment's Project Assessment and Reporting System-II (PARS-II). The supporting documentation resides in the files of the NP. The EOY report is based on PARS II data through the end of August.				

Program	Nuclear Physics				
Performance Goal (Measure)	**NP Facility Operations** - Average achieved operation time of NP user facilities as a percentage of total scheduled annual operation time				
Fiscal Year	**2020**	**2021**	**2022**	**2023**	**2024**
Target	≥ 80 %	≥ 80 %	≥ 80 %	≥ 85 %	≥ 85 %
Result	**Met** - 89	**Met** - 104	**Met** - 111	**Not Met** - 82	**Exceeded** - 114
Endpoint Target	Many of the research projects that are undertaken at the Office of Science's scientific user facilities take a great deal of time, money, and effort to prepare and regularly have a very short window of opportunity to run. If the facility is not operating as expected the experiment could be ruined or critically setback. In addition, taxpayers have invested millions or even hundreds of millions of dollars in these facilities. The greater the period of reliable operations, the greater the return on the taxpayers' investment.				
Commentary on 2024 Results (Action Plan if Not Met)	EOY: Target met. For the year the four facilities (ATLAS, CEBAF, FRIB, RHIC) delivered 17,075 operating hours of 14,919 planned; the facilities delivered over 114% of the planned hours with all four over 100%. The average reliability for the year was 87%.				
Documentation, Limitations, Methodology, Validation, and Verification	The total planned operating hours for ATLAS (Argonne Tandem-Linac Accelerator System), CEBAF (Continuous Electron Beam Accelerator Facility), FRIB (Facility for Rare Isotope Beams), and RHIC (Relativistic Heavy Ion Collider) is 14919 hours. Quarterly: Emails from ANL (ATLAS), BNL (RHIC), MSU (FRIB), and JLAB (CEBAF) management to NP Office with statistics regarding breakout of beam hours (per documented control process); NP program office worksheet showing calculations. EOY: Official letters from ANL (ATLAS), JLAB (CEBAF), MSU (FRIB) and BNL (RHIC) management to NP Office reporting and certifying annual achieved operation time of the user facility (per documented control process); NP program office worksheet. Documentation resides in the Office of Nuclear Physics files. This target is met when the total operating time is 85% or greater.				

APPENDIX A: Goals For Management Priorities

Goals to Address Management Priorities

DOE's Agency Financial Report, available at https://energy.gov/cfo/listings/agency-financial-reports, provides a complete description of DOE's Management Priorities as well as a discussion of progress to date and planned actions to address these priorities. The table below provides a summary of each challenge along with the related performance goals and milestones, and the responsible DOE official.

Management Priority	FY 2024 / Related Performance Goals / Indicators / Milestones
Cybersecurity: Responsible Official: Chief Information Officer Today's rapidly evolving cyber landscape presents unprecedented opportunities and challenges. Achieving a safe, secure, and resilient cyber environment requires DOE to continually pursue cost effective investments and activities to reduce cyber risk. Cyber is an enterprise-wide responsibility and demands an expanded view to encompass the broad scope of information sharing and information safeguarding.	Protect - Identity Management - Implement federated identity management supporting Zero Trust Architecture objectives integrating identity sources across DOE providing a single identity database for permanent DOE staff. Obtain performance of 95% (no change FY 25) of all identities for permanent staff across DOE contained in the departmental identity database by FY23 Q4 and maintain annually thereafter subject to availability of funds supporting Zero Trust Architecture. • Met. Protect – Multifactor Authentication (MFA) for Applications - Conduct a risk based assessment consistent with Digital Identity Risk Assessment (DIRA) for all applications within externally accessible unclassified FISMA high and moderate systems, identify the proper credential for each role within the application in accordance with the revised NIST 800-63 standard, and require the use of the proper credential for access to the application directly or through federation with the departmental access management service in support of M-22-09. Require the credential identified through the role-based risk assessment for 95% (Propose that this be removed as the MFA for systems while a separate measure the metric will no longer be available through the FISMA reporting) of all applications within unclassified FISMA high and moderate systems where technically feasible by FY25 Q4 and maintain annually thereafter subject to availability of funds. • Not Met – Achieved 65%. Protect – Multifactor Authentication (MFA) for Systems – MFA is required to access externally accessible unclassified FISMA high and moderate systems where technically feasible in support of EO 14028. Achieve an MFA performance of 95% by FY23 Q2 requiring the use of MFA to access externally accessible unclassified FISMA high and moderate systems were technically feasible and maintain annually thereafter subject to funds availability. • Not Met – Achieved 65% Protect – Standards Based Application Access - Implement single signon to enterprise applications directly or through federation with the DOE enterprise access management service. Increase standards-based federated access (single signon) to enterprise (accessed by DOE staff external to the departmental element) applications achieving 148 (FY 25 goal is 438) in FY22 and increase by 15 applications/environments quarterly • Met

Management Priority	FY 2024 / Related Performance Goals / Indicators / Milestones
Security: Responsible Official: Associate Under Secretary for Environment, Health, Safety and Security. Safeguarding and protecting national assets entrusted to DOE in an effective and efficient manner to support DOE mission success.	**FY 2024 Performance Measures**: Publish a Security System Design Reference (SSDR) on risk and vulnerability assessments and begin development of an SSDR for the protective force. • Result: Published SSDR for risk and vulnerability assessments, but a revision was necessary for additional content. The SSDR is now planned for final publishing in April 2025. Began development of the SSDR for protective forces as planned and circulated a mature draft for peer review. Complete draft update of the Design Basis Threat Policy based on a revised Nuclear Security Threat Capability Assessment released in FY 2023. • Result: Issued Design Basis Threat Change 2 in February 2024. Complete 90% of security waivers and exemptions received within 60 days of program office initial request. • Result: Processed all waiver and exemption requests within the allotted time. FY 2024 Performance Measure: Trusted Workforce Goal: Assist the Office of Human Capital with enrollment of Federal employees in non-sensitive public trust populations into continuous vetting. • Result: Assisted the Office of Human Capital with enrollment of approximately 2,000 Federal employees in non-sensitive public trust positions into continuous vetting.

Management Priority	FY 2024 Related Performance Goals / Indicators / Milestones
Safety: Responsible Official: Director, Office of Environment, Health, Safety and Security Maintain the safety and health of the DOE Federal and contractor workforce, the public, and the environment during Departmental operations, while striving to enhance the Department's productivity to achieve mission objectives.	FY 2024 Performance Measure: Provided valued and consistent support to Departmental climate and sustainability programs. Delivered leadership remarks at DOE Sustainability Summit and advanced Departmental objectives through Sustainable Climate Ready Sites program and Conservation Action Plan updates to the White House FY 2024 Performance Measure: • In FY 24, DOE responded to a total of 18,722 records requests from DOL and NIOSH in support of the Energy Employees Occupational Illness Compensation Program. Of these, 17,802 were completed in under 60 days, so DOE had a 95% on time response rate. FY 2024 Performance Measure: • DOE-HDBK-1221-2016 and DOE-HDBK-1224-2018, Handbook completed and published to the DOE Standards website on 07/25/24.

Management Priority	FY 2024 Related Performance Goals / Indicators / Milestones
Energy Justice: Responsible Officials: Office of Energy Justice and Equity Tackling the Climate Crisis at Home and Abroad, which established the historic Justice40 Initiative, a whole-of-government effort committed to delivering 40 percent of the overall benefits of climate and clean energy investments to disadvantaged communities. The ambitious and historic initiative will allow the Department to deepen its current environmental justice efforts and provide an unprecedented opportunity to expand its equity footprint through diverse programs. Key challenges for the Justice40 Initiative relate to its scope.	DOE-EJE has the following goals for FY24/25 to expand the Department's energy and environmental justice efforts, in collaboration with offices across the Department and other Federal Agencies: • Publish department wide EEJ strategy and glossary to establish a cohesive lexicon for the Department. • Continue to develop and coordinate tracking and mapping of disadvantaged communities for Justice40 Covered funding opportunities. • Provide increased support and technical assistance to DOE offices, states, and other recipients of DOE funding to increase opportunities for the historically underserved and underrepresented, including CEJST recognized disadvantaged communities. • Develop a strategy and conduct evaluation of Department Justice40 Covered Programs Develop an energy poverty framework and strategy **Status updates:** The Office of Energy Justice and Equity updated DOE Disadvantaged Communities Reporter Mapping Tool on March 30, 2024, to include CEJST census tracts and help transition to the White House definition of disadvantaged communities. (Link). The Office of Infrastructure also released an interactive map that shows where, through IIJA and IRA funding, the Department is investing in communities across the country. This map identifies where DOE's demonstration and deployment investments are occurring and includes high-level snapshots of the community benefits that may be associated with these investments. The map serves as a tool that local communities can use to better understand what DOE-supported projects are being developed in their areas and to engage more effectively with the project, ultimately creating stronger and more specific benefits and building long-term project support. (Link) The Office of Energy Justice and Equity awarded a contract to the National Academies of Sciences, Engineering, and Medicine (NASEM) to conduct an independent study to evaluate the Department of Energy's (DOE's) Justice40 (J40) programs, which promote equitable distribution of the benefits associated with DOE investments in clean energy and other programs to disadvantaged communities. In partnerships with several DOE program offices, the Office of Energy Justice and Equity launched the Regional Energy Democracy Initiative (REDI), an inaugural program aimed at empowering communities in the U.S. Gulf South region. With a commitment of $5 million, the REDI pilot is designed to provide capacity building and technical assistance for communities in the region to maximize the benefits derived from DOE's clean energy investments.

Management Priority	FY 2024 Related Performance Goals / Indicators / Milestones
Environmental Cleanup: Responsible Official: Environmental Management For more than 30 years, EM has cleaned up the environmental legacy of decades of nuclear weapons production and government-sponsored energy research. While progress has been made, the remaining work is technically complex with associated high risks.	Key Indicator 1: Hanford Initiate dewatering and grouting of K-West 105 Area Spent Fuel Basin at Hanford. Remain on track to complete Direct Feed Low Activity Waste System (DFLAW) pre-vitrification activities. • Summary of FY 2024 Progress - Completed K-West 105 Area Basin dewatering and grouting more than a year ahead of the FY 2025 goal. On-track to complete DFLAW pre-vitrification activities. Continued to make steady progress in commissioning and preparing for the cold commissioning management assessment. Key Indicator 2: Savannah River Site Implement Next Generation Solvent Phase I at the Salt Waste Processing Facility (SWPF). • Summary of FY 2024 Progress - Completed implementation of Next Generation Solvent Phase I and processed approximately 2.81M gallons of tank waste, equivalent to nearly 11M curies processed Key Indicator 3: Oak Ridge Complete East Tennessee Technology Park (ETTP) soil remediation field work at Zone 2 Exposure Units 13 and 39 (Z2EU-13 and Z2EU-39). • Summary of FY 2024 Progress - Completed soil remediation field work at ETTP, more than a year ahead of the FY 2025 goal Key Indicator 4: Idaho Cumulatively treat approximately 100 thousand (K) gallons of radioactive sodium bearing tank waste at the Integrated Waste Treatment Unit (IWTU). • Summary of FY 2024 Progress - Treated approximately 47K gallons of tank waste, exceeding the FY 2024 interim target by 15%. Since startup in April 2023, IWTU has treated approximately 115K gallons of tank waste (> 12% total volume). Key Indicator 5: Portsmouth Cumulatively convert approximately 44K metric tons (MT) of Depleted Uranium Hexafluoride (DUF6) to uranium oxide. • Summary of FY 2024 Progress - Converted over 12K MT of DUF6 to uranium oxide. Since the start of the Project in FY 2010 through end-FY 2024, over 45K MT of DUF6 has been converted. Key Indicator 6: Los Alamos Complete at least 30 transuranic (TRU) waste shipments from Los Alamos to the Waste Isolation Pilot Plant (WIPP) in FY 2024. • Summary of FY 2024 Progress - Completed 22 shipments of TRU waste to WIPP. The FY 2024-2025 target of 65 TRU waste shipments remains on-track. Key Indicator 7: West Valley Ship and dispose 10K cumulative tons of Main Plant Process Building (MPPB) demolition debris. • Summary of FY 2024 Progress - Shipped approximately 12K tons (22K cumulative tons) of MPPB demolition waste in FY 2024. FY 2024 progress exceeded the Q1 FY 2025 interim target by 10% three months ahead of schedule. Key Indicator 8: Moab Ship 950K tons of uranium mill tailings to the Crescent Junction disposal site. • Summary of FY 2024 Progress - Excavated, transported, and disposed 1,036,065 tons of uranium mill tailings to Crescent Junction, exceeding the 950K ton interim target by over 9%.

Management Priority	FY 2024 Related Performance Goals / Indicators / Milestones
Human Capital Management and Diversity and Inclusion: Responsible Official: Chief Human Capital Officer DOE requires an empowered and high-performing Federal workforce to accomplish the mission while including Diversity, Equity, Inclusion, and Accessibility in the Federal Workforce, which applies the concept of "underserved communities" to the context of the Federal workforce. In so doing, the EO greatly expands the scope of individuals identified as underrepresented in the Federal workforce and recognizes individuals may belong to more than one underserved community and face intersecting barriers. Key human capital challenges include: • Competition for highly skilled talent • Risk to institutional knowledge due to retirement eligibility of the workforce • Vulnerability to unplanned attrition • Workforce and leadership development gaps • Employee engagement.	Increase Efficiency in Time to Hire – Increase the percentage of completed hiring actions that meet the OPM 80-day End-to-End hiring model. (New Measure beginning FY 2022). FY2024 Target: ≥35% of hiring actions are completed in 80 calendar days or less. • Result: In FY2024, the Department of Energy completed 61.2% of all hires within 80 calendar days or less, achieving the current annual goal. Retention of a high performing workforce - Increase the retention of a high performing workforce. FY 2024 Target: ≤ 34 % of all attrition is made up of High Performing Employees. • Result: In FY2024, only 33.2% of attrition for the Department of Energy was made up of high performing employees, achieving the current annual goal.

Management Priority	FY 2024 Related Performance Goals / Indicators / Milestones
Contract and Major Project Management: Responsible Officials: Director, Office of Project Management The Department is the largest civilian contracting workforce agency in the Federal Government and spends approximately 90 percent of the annual budget on contracts to operate its scientific laboratories, engineering and production facilities, and environmental restoration sites, and to acquire capital assets. Contractors at DOE sites and laboratories perform critical missions, including maintaining the nuclear weapons stockpile, cleaning up radioactive and hazardous waste resulting from the legacy of the Manhattan Project, and conducting some of the world's most sophisticated basic and applied energy and scientific research activities. To conduct these missions, the Department manages large complex capital asset projects. The Department's portfolio of construction projects includes 133 projects at a value of $126 billion. Within the portfolio, as of October 2024, there are 53 construction projects in execution, or post-CD-2, totaling $42 billion. These projects are tracked to CD-4, or project completion, and performance is measured and reported against this agency goal. The remaining projects in the portfolio are in planning and design.	Project Management Success: Complete 90% of the construction projects at the original scope and within 10% of cost baseline established at Critical Decision (CD)-2, approve performance baseline. • Result: Achieved. For FY 2024, the result was 100%, exceeding the goal of 90%. During FY 2022-2024, DOE completed 17 capital asset projects with all 17 successfully completed at original scope and within 110% of the Total Project Cost (TPC) established at Critical Decision-2.

Management Priority	FY 2024 Related Performance Goals / Indicators / Milestones
Nuclear Stockpile Stewardship: Responsible Officials: Deputy Administrator for NNSA Defense Programs, and Administrator for NNSA This mission is carried out by NNSA's Office of Defense Programs (DP) through the Stockpile Stewardship Program (SSP). The SSP was established to maintain the active stockpile, execute warhead acquisition programs as required to meet emerging DoD requirements; maintain and upgrade NNSA laboratory and production infrastructure; develop and maintain the underpinning science and engineering; and ensure a highly trained and skilled workforce. Since the inception of the SSP, this mission has been accomplished without requiring additional underground nuclear explosive testing through the application of specialized science, technology, engineering, and manufacturing.	Annual Warheads Assessment *FY 2024 Targetl*: Conduct 100% of annual assessment activities • Results: Met 100% of annual assessment activities. The NNSA and Laboratory Annual Assessment Coordinators and Teams have successfully met the obligations of this performance measure for FY 2024. Tritium Production *FY 2024 Target*: Optimize tritium production for high confidence of producing sufficient tritium in each reactor cycle to meet national security inventory needs. (FY 2024 Target: 12,224 tritium-producing burnable absorber rods (TPBAR) *)* • Results: An additional 1,680 TPBARs were loaded into WBN2 during FY2024, for a cumulative total of 14,112 TPBARs. No TPBARs were loaded into WBN1 in FY24. Science-Based Capabilities *FY 2024 Target*: Each year provide the science-based capabilities (e.g., experimental infrastructure, assessment and certification methodologies, experiments, data, and analyses) required to enable the annual assessment and certification of the stockpile including certification of LEPs and weapon modifications. (FY 2024 Target: 100% of progress) • Results: Met 100% of progress. The program ended with significant successes achieved. Major work supporting stockpile certification focused on actinide sciences, high explosives and energetic materials science, and the execution of hydrodynamic and subcritical experiments all of which are designed to improve the physics-basis of weapon's modeling to bolster the quantifications of margins and uncertainties standards that underpins stockpile certification. Modernize Plutonium Infrastructure *FY 2024 Target*: Annually complete 90% of Plutonium major items of equipment (MIE) and minor construction (MC) infrastructure investments required to reach a war reserve pit production rate of 80 pits per year to support production requirements for the nuclear modernization program of record. • Results: Met 44% of FY24 Equipment milestones. While only four FY24 equipment projects that were a part of the FY24 Milestone Reporting Tool (MRT) completed turnover to operations (TTO), seven equipment projects (3 MIE, 4 Expense projects) completed TTO in FY24, and one FY24 MRT equipment project had 2 of 5 subprojects complete. Some of the projects that completed TTO were beneficial in supporting first production unit (FPU) activities.

Management Priority	FY 2024 Related Performance Goals / Indicators / Milestones
Climate Change: Responsible Officials: Under Secretary S-3/4 In response to the climate crisis, and recent Administration climate requirements DOE developed and released a Climate Adaptation and Resilience Plan and is developing a Sustainability Plan that will provide a framework for Departmental initiatives to address the climate crisis. The plans focus on the following Departmental initiatives, which include a continuation of ongoing activities as well as new initiatives supporting adaptation to current and projected impacts of climate change as well as initiatives addressing climate mitigation and reducing energy demand and Greenhouse Gas (GHG) emissions.	• Elevate and integrate key technologies: **Achieved (3)** o **Artificial Intelligence**: DOE continues to elevate AI, deliver on the October 2024 AI Executive Order (EO), comply with the March OMB Memorandum on Responsible AI Use (M-24-10), and work on the potential energy opportunities and challenges of AI. o **Biotechnology**: In addition to previously reported activities, DOE is continuing to (i) take a wide range of actions to advance U.S. biotechnology and biomanufacturing, (ii) marshal cutting-edge biological capabilities, and (iii) serve as a key member of the National Bioeconomy Board, which is maturing. o **Microelectronics:** DOE is an active member of the Steering Committee for the National Semiconductor Technology Center and has facilitated visits for the Committee to understand the resources at DOE's National Laboratories. o **Quantum Information Sciences**: DOE convened a new working group co coordinate and amplify activities in QIS. Engaging interagency and external stakeholders through the National Quantum Coordinate Office, DOE's National QIS Research Centers, and large conferences and industry engagements. • Implement the Energy Earthshots™: **Achieved / Exceeded (22)** o **Holding 8 Energy Earthshot Summits** (Clearly communicated, Stakeholders Engaged, Measurable Progress) ♣ Q1: The Industrial Heat Shot Summit ♣ Q3: First Clean Fuels and Products Shot™ Summit (virtual), The Annual Hydrogen Shot ™ Summit (hybrid), Floating Offshore Wind Shot™ Annual Summit (in person), First Affordable Home Energy Shot™ Summit (virtual), ♣ Q4: Long Duration Storage Shot ™ and Carbon Negative Shot™ Annual Summits (hybrid), Science Summit for Energy Earthshot Innovation (hybrid) o **2 New International Collaborations** (Leading the Way, Stakeholders Engaged, Purposeful) ♣ Q3: Japan joined as the first international collaborator of the U.S. Floating Offshore Wind Shot ™. ♣ Q4: Announced coordinated funding between DOE and Innovation Fund Denmark to support U.S.-Danish consortia to improve Floating Offshore

	Wind energy mooring and anchoring technologies (also supports Resources Aligned implementation element) o **7 Key Documents Released** (Resources Aligned, Strategic Planning, Clearly Communicated, Measuring Progress) ♣ Q1: The Roads to Removal (R2R) report and The Hydrogen Shot™ Thermal Conversion Report ♣ Q2: Bioenergy Technology Office's (BETO) 2023 Billion-Ton Report (BT23) and the Roundtable Report on Foundational Science for Carbon Dioxide Removal Technologies ♣ Q3: Release of Hydrogen and Fuel Cells Technology Office (HFTO) new Multiyear Program Plan which supports the Hydrogen Shot ™ and Floating Offshore Wind Shot ™ Progress and Priorities Report. ♣ Q4: Publication of Sustainable Aviation Fuel (SAF) State-of-Industry Report: State of SAF Production Process report, which aligns with the Clean Fuels and Products Shot ™ o **3 Innovative Funding** (Resources Aligned, Technology Focus, Decisive, Leading the Way, Jobs, Economic and Energy Justice) ♣ Q2: Carbon Negative Shot ™ Pilots FOA ♣ Q3: DOE announced a second-round funding opportunity for enhanced geothermal systems (EGS) demonstrations under the Bipartisan Infrastructure Law (BIL), supporting the Enhanced Geothermal Shot ™. ♣ Q4: Kick-off of the DOE funded GEODE initiative (Geothermal Energy from Oil and Gas Demonstrated Engineering) • Catalyze Private Sector Engagement: **Achieved / Exceeded ($98B)** DOE catalyzed cost sharing and engagement through execution of 130 BIL/IRA financial assistance mechanisms, including $98B in projected cost share commitment to date. o Q1: 12 financial assistance announced; more than $10.3B released in funding opportunities. o Q2: 14 financial assistance announced; $2.6B released in funding opportunities. o Q3: 7 financial assistance announced; $575M released in funding opportunities. o Q4: 7 financial assistance announced; $216M released in funding opportunities in FY24 Q4.

APPENDIX B: DOE-Funded Studies

Evaluations Completed in FY 2024

Program, Topic or Area Evaluated and Name of Study	Brief Description of Study[1]	Evaluators and Hyperlink to Completed Evaluation
1. *Office of Workforce Development for Teachers and Scientists (WDTS), via Basic Energy Sciences Advisory Committee (BESAC)*	A Committee of Visitors (COV) examined the activities of the Office of Workforce Development for Teachers and Scientists (WDTS) within the Office of Science over the fiscal years 2017 - 2022. The COV assessed (1) the efficacy and quality of the processes used to solicit, review, recommend, monitor, and document application, proposal, and award actions; and (2) the quality of the resulting portfolio, including its breadth and depth and its national standing, benchmarked with other comparable Federal STEM programs. Additionally, the COV provided comments on the effectiveness of the online technology development and evaluation activities in support of WDTS programs and outreach efforts to enhance the diverse and inclusive participation in WDTS programs.	*Evaluators: external evaluators from universities and DOE national laboratories*
Report of the Committee of Visitors for the Office of Workforce Development for Teachers and Scientists		*Hyperlink* https://science.osti.gov/-/media/bes/besac/pdf/2023/2023-Report-CoV-DOE-Office-of-Workforce-Development-for-Teachers-and-Scientists_Final.pdf

Program, Topic or Area Evaluated and Name of Study	Brief Description of Study[1]	Evaluators and Hyperlink to Completed Evaluation
1. *Basic Energy Sciences Materials Sciences and Engineering Division, via Basic Energy Sciences Advisory Committee (BESAC)*	A Committee of Visitors (COV) examined the activities of the Materials Sciences Division of the Office of Basic Energy Sciences with the Office of Science over the fiscal years 2018-2022. The COV (1) assessed the efficacy and quality of the process used to solicit, review, recommend, and document proposal actions and to monitor active projects and programs, for both DOE laboratory projects and the grant program; (2) commented on how the award process affected the breadth and depth of portfolio elements, and the national and international standing of the portfolio elements, within the boundaries of DOE's mission and available funding. The COV also commented on the diversity, equity, and inclusivity of participation in MSE programs.	*Evaluators: external evaluators from universities and DOE national laboratories*
Report of the Committee of Visitors for the Basic Energy Sciences Materials Sciences and Engineering Division		*https://science.osti.gov/-/media/bes/besac/pdf/2023/2023-BESAC-MSECOV-Report-124.pdf*

Program, Topic or Area Evaluated and Name of Study	Brief Description of Study[1]	Evaluators and Hyperlink to Completed Evaluation
1. *Program, Topic or Area Evaluated* **OneLPO Process Improvements**	From October 2023 to February 2024, LPO engaged Oliver Wyman to help us improve program throughput. Oliver Wyman conducted interviews with LPO staff, as well as applicants and advisors, and incorporated external benchmarking from commercial banks and other government agencies. The study recommended solutions, including: • Formalized the definition of high-quality projects and applications to ensure pipeline is efficient for LPO staff and applicant resources • Designed a framework to categorize loans into archetypes with differentiated timeline expectations (calibrated with external benchmarks) and review process based on the risk characteristics of the project and borrower • Standardized tools and templates for use across the organization to scale best practice s • Refined approach to LPO governance that simplifies escalation paths, improves visibility on key decisions, and promotes more efficient and disciplined decision-making • Defined the roles and responsibilities at each process step to better articulate the expected interaction model within deal teams and embed standard control checks and stage-gates	*Evaluators* **Oliver Wyman**
Name of Study **OneLPO Process Improvements**		*Hyperlink* **N/A**