

April 26, 2021

The Honorable Marcy Kaptur
Energy & Water Development Subcommittee
House Committee on Appropriations

The Honorable Mike Simpson
Energy & Water Development Subcommittee
House Committee on Appropriations

RE: FY2022 Appropriations Request for Department of Energy Activities Pertaining to Energy Storage

Dear Chair Kaptur and Ranking Member Simpson,

Energy storage technologies are central to decarbonizing the power and transportation systems, particularly one increasingly powered by renewable wind, solar, and hydroelectric resources. Diversifying energy storage technologies and deploying them at unprecedented scale will be critical for allowing electrification of our economy while increasing resilience of the power system and linked infrastructures. The energy storage industry is a fast-growing source of well-paid clean energy jobs, employing over 75,000 people as of 2019 and paying a median hourly wage of \$24.36, according to the [2020 U.S. Energy and Employment Report](#) and its [Supplement on Wages, Benefits, and Change](#).

To meet the intertwined goals of decarbonization, resilience, and economic recovery, ESA recommends a step-change in the level of public investment in energy storage technologies. The Department of Energy (DOE) is the primary authority through which the federal government directly invests in energy storage technology innovation and deployment. ESA recommends a trajectory of increasing appropriations for energy storage that is on par with other areas of investment critical to balancing a high share of renewables, rising over the next three years to at least \$1 billion annually with a focus on the demonstration phase of storage technology innovations. This trajectory is illustrated below.

Recommended DOE Energy Storage Appropriations Trajectory FY22-25

Program Request	FY22	FY23	FY24	FY25
Energy Storage Technology Research & Development	260	370	480	600
Energy Storage Demonstration & Pilot Grant Program	150	200	300	300
Grid Storage Launchpad Facility Construction	47	-	-	-
DOD Joint Long Duration Storage Demonstration Program	30	30	30	30
Joint Center for Energy Storage Research	24	24	24	24
Battery Minerals and Processing Research, Development, & Demonstration	70	130	190	250
DOE Energy Storage Grand Challenge Total	581	754	1,024	1,204

ESA makes recommendations in the attachment to this document regarding the activities and appropriations levels needed to begin this trajectory. **ESA specifically recommends \$581 million for FY 2022 across DOE's program offices focused on accelerating energy storage technology development, with a focus on technology demonstration and complementary efforts to build a U.S. supply chain.**

These activities fall across multiple DOE programs, and ESA asks that the committee make specific direction in its report language that clarifies these items individually, per the intent of the authorizations included in Section 3201 of the Energy Act of 2020, which was incorporated into the Consolidated Appropriations Act, 2021.

Thank you for your attention and consideration of this request. I welcome you to reach out to me at j.burwen@energystorage.org if you wish to discuss this request in greater detail.

Sincerely,

A handwritten signature in black ink, appearing to read 'J.B.', with a long horizontal flourish extending to the right.

Jason Burwen
Interim Chief Executive Officer
U.S. Energy Storage Association

CC:

The Honorable Debbie Wasserman Schultz
The Honorable Ann Kirkpatrick
The Honorable Susie Lee
The Honorable Tim Ryan
The Honorable Derek Kilmer
The Honorable Lois Frankel
The Honorable Cheri Bustos
The Honorable Bonnie Watson Coleman
The Honorable Ken Calvert
The Honorable Chuck Fleischmann
The Honorable Dan Newhouse
The Honorable Jaime Herrera Beutler
The Honorable Guy Reschenthaler

ATTACHMENT:
Recommended FY 2022 Appropriations for DOE Energy Storage Activities

Title of Request: [Energy Storage Grand Challenge \(ESGC\) Research & Development Activities](#)

Department/Agency: Department of Energy

Account: Departmental Level

Program(s): EERE and OE

Amount Requested for FY22:

OE - Storage R&D: \$80,000,000

EERE - Storage R&D: \$180,000,000

Brief Request Justification

Energy storage technologies are critical to integrating diverse power supply resources while strengthening electric infrastructure reliability and resilience. The Energy Storage Grand Challenge (ESGC) at the Department of Energy (DOE) is a comprehensive 10-year strategy to accelerate the development, commercialization, and utilization of next-generation energy storage technologies. The ESGC is focused on developing and demonstrating a wide range of energy storage technologies, as well as building a domestic energy storage supply chain that reduces U.S. vulnerabilities associated with foreign sources of critical minerals, industrial inputs, and manufactured goods.

Investments in energy storage technology R&D are critical to driving cost declines and performance improvements among a variety of storage technology pathways. The OE Energy Storage Program invests in battery storage and other electricity storage technologies like ultracapacitors for electric grid service. EERE invests in a variety of storage technologies, including pumped hydropower storage (in the Water Power Technologies Office), thermal storage (in the Building Technologies Office), power-to-gas hydrogen storage (in the Hydrogen & Fuel Cell Technologies Office). The Office of Science conducts important industry data collection and energy storage technology validation work at its user facilities. Significant funding increases are authorized per the intent specified in Section 3201(b) of the Energy Act of 2020, which was incorporated into the Consolidated Appropriations Act, 2021.

Report Language Request(s)

The Committee recommends not less than \$80,000,000 for the Office of Electricity to support research & development for electrochemical and capacitor storage technologies. The Committee recommends not less than \$180,000,000 for the Office of Energy Efficiency and Renewable Energy to support research & development for battery, pumped hydropower, thermal storage, power-to-gas storage, and other technologies specific to its program offices. The Committee encourages the Department to clarify research and development responsibility for energy storage technologies, such as mechanical storage using adiabatic processes and thermal storage using molten materials, that are not currently incorporated in the energy storage research and development activities of either the Office of Electricity or the Office of Energy Efficiency and Renewable Energy. The Committee supports investments by the Department in electrochemical storage anode, cathode, and other materials that reduce reliance on critical supply chains, such as disordered rocksalt cathodes technology. The Committee supports the Department to undertake longitudinal testing of a range of battery technologies from diverse vendors and publicize information associated with cycling, performance, and degradation.

Title of Request: Energy Storage Demonstration and Pilot Grant Program**Department/Agency:** Department of Energy**Account:** Departmental Level**Program(s):** EERE and OE**Amount Requested for FY22:**

OE - Storage Demonstrations & Grants: \$75,000,000

EERE - Storage Demonstrations & Grants: \$75,000,000

Brief Request Justification

Energy storage will play a vital role in integrating new energy sources while strengthening grid reliability. The Energy Storage Grand Challenge (ESGC) is DOE's comprehensive strategy to accelerate the development, commercialization, and utilization of next-generation energy storage technologies. The ESGC is focused on developing and demonstrating a wide range of energy storage technologies, as well as building a domestic energy storage supply chain that does not depend on foreign sources of critical minerals. This request focuses on establishing a crosscutting energy storage demonstration program. It is designed to supplement EERE's and OE's existing energy storage R&D programs, not to substitute for them.

DOE should significantly increase investment in energy storage demonstrations to meaningfully transform the market for storage technologies necessary for a fully decarbonized and resilient electricity grid. The requested levels represent significant increases in funding for energy storage demonstrations. These funding levels are justified to ensure multiple grid-scale energy storage projects are demonstrated across a diversity of technologies, geographies, and applications, per the intent specified in Section 3201(c) of the Energy Act of 2020, which was incorporated into the Consolidated Appropriations Act, 2021. It is also consistent with the ESGC Final Roadmap, published in December 2020 to position the U.S. for global leadership in the energy storage technologies of the future, enabling the U.S. to *"Innovate Here, Make Here, and Deploy Everywhere."*

Report Language Request(s)

The Committee recommends \$150,000,000 for competitive energy storage demonstration projects. The Committee supports the Department's Energy Storage Grand Challenge (ESGC), which includes cost-shared demonstrations of energy storage technologies. Within available funds, the Committee recommends \$75,000,000 for the Office of Electricity to support competitive grants for battery energy storage demonstrations. Within available funds, the Committee recommends \$75,000,000 for the Office of Energy Efficiency and Renewable Energy to support a wide range of energy storage demonstration projects, including bidirectional mechanical, thermal, and chemical storage technologies. The Committee directs the Department to explore demonstrations of aggregations of distributed battery storage installations and other distributed energy resources. The Committee directs the Department to explore cross-sectoral demonstration projects that merge battery storage technologies with flexible load, electric fuel production, and dynamic energy efficiency resources to better leverage grid resources and meet customer needs.

Title of Request: Grid Storage Launchpad Facility Construction**Department/Agency:** Department of Energy**Account:** Departmental Level**Program(s):** OE**Amount Requested for FY22:**

OE – Grid Launchpad Facility Construction: \$47,000,000

Brief Request Justification

The U.S. will maintain leadership in energy storage technology through successful commercialization of new technologies. The ESGC includes a 10-year strategy and metrics for accelerating the translation of storage technologies from laboratory to market. This request focuses on supporting construction of national laboratory facilities to support this objective. It is designed to supplement OE's existing energy storage R&D programs, not to substitute for them.

DOE should fully fund the construction of the Grid Storage Launchpad at the Pacific Northwest National Laboratory, which will work in partnership with the private sector to speed up the technology proving and performance validation of new grid energy storage technologies. It is also consistent with the ESGC Final Roadmap, published in December 2020 to position the U.S. for global leadership in the energy storage technologies of the future, enabling the U.S. to *"Innovate Here, Make Here, and Deploy Everywhere."*

Report Language Request(s)

The Committee recommends \$47,000,000 for continued construction of the Grid Storage Launchpad facility.

Title of Request: DOD Joint Long Duration Storage Demonstration Program**Department/Agency:** Department of Energy**Account:** Departmental Level**Program(s):** OE**Amount Requested for FY22:**

OE – DOD Joint Initiative and Demonstrations: \$30,000,000

Brief Request Justification

The Department of Defense pursues significant mission assurance objectives, including energy assurance for installations. Longer-duration energy storage technologies present a new capability for military mission assurance and merit further RD&D investment directed by the needs and performance requirements of U.S. military procurement authorities.

DOE should establish a joint program with the Department of Defense for development and demonstration of longer-duration energy storage technologies, per the intent specified in Section 3201(d) of the Energy Act of 2020, which was incorporated into the Consolidated Appropriations Act, 2021. This program can be executed in coordination with the larger energy storage RD&D activities of DOE, which are expected to include investment in longer-duration storage technologies for civilian use.

Report Language Request(s)

The Committee directs the Department to establish the Long Duration Demonstration Initiative and Joint Program with the Department of Defense, for which it recommends within available funds not less than \$30,000,000.

Title of Request: Joint Center for Energy Storage Research

Department/Agency: Department of Energy

Account: Departmental Level

Program(s): Office of Science

Amount Requested for FY22:

Science – Joint Center for Energy Storage Research: \$24,000,000

Brief Request Justification

The DOE Energy Innovation Hubs consolidate science and basic research focused on meeting overarching applied challenges. The Joint Center for Energy Storage Research (JCESR) is the DOE Innovation Hub focused on fundamental research that can lead to breakthroughs in energy storage technologies for electric vehicles, power systems, and consumer devices. The continued funding of JCESR will continue to provide this important coordination and focus on energy storage research associated with the Office of Science's Basic Energy Sciences.

Report Language Request(s)

The Committee recommends \$24,000,000 for continued funding of the Joint Center for Energy Storage Research.

Title of Request: Battery Minerals and Processing Research, Development, and Demonstration

Department/Agency: Department of Energy

Account: Departmental Level

Program(s): EERE

Amount Requested for FY22:

EERE – Battery Minerals and Processing RD&D: \$70,000,000

Brief Request Justification

Battery energy storage technologies are critical to both power sector and transportation sector market transformation. The ESGC is focused on building a domestic energy storage supply chain that does not depend on foreign sources of critical minerals, which is also a national security objective as stated in Executive Order 14017. This request focuses on establishing new research, development, and demonstration activities to improve efficiency and performance of technologies and processes to mine, process, and enrich inputs to battery manufacturing, as well as reclamation of materials via battery recycling.

DOE should use its existing authorities to make investments in technologies and processes to improve the efficiency and reduce the environmental and public health impacts associated with the upstream

battery supply chain, focusing on technologies and processes for producing battery manufacturing inputs—which is the most concentrated stage of the global battery supply chain. DOE should additionally invest in technologies and processes that improve the efficiency and sustainability of battery recycling and reclamation of critical materials, per the intent specified in Section 3201(e) of the Energy Act of 2020, which was incorporated into the Consolidated Appropriations Act, 2021.

Report Language Request(s)

Within available funds, not less than \$70,000,000 is provided for EERE's Advanced Manufacturing Office for research, development, and demonstration of battery recycling, as well as for battery minerals processing and enrichment processes.