U.S. DEPARTMENT OF ENERGY

Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

FY 2022 Request Overview Briefing

June 2021

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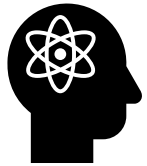
FY 2022 Request Strategy

Accelerate the research, development, demonstration, and deployment of technologies and solutions to equitably transition America to a carbon pollution-free electricity sector by 2035 and a economy by no later than 2050, creating good-paying jobs with the free and fair chance to join a union, and ensuring the clean energy economy benefits all Americans, especially workers and communities impacted by the energy transition and those historically underserved by the energy system and overburdened by pollution.

EERE Mission

Keys to Ensure the Greatest Impact

Environmental Justice and Equity



Diversity in STEM

Workforce Development

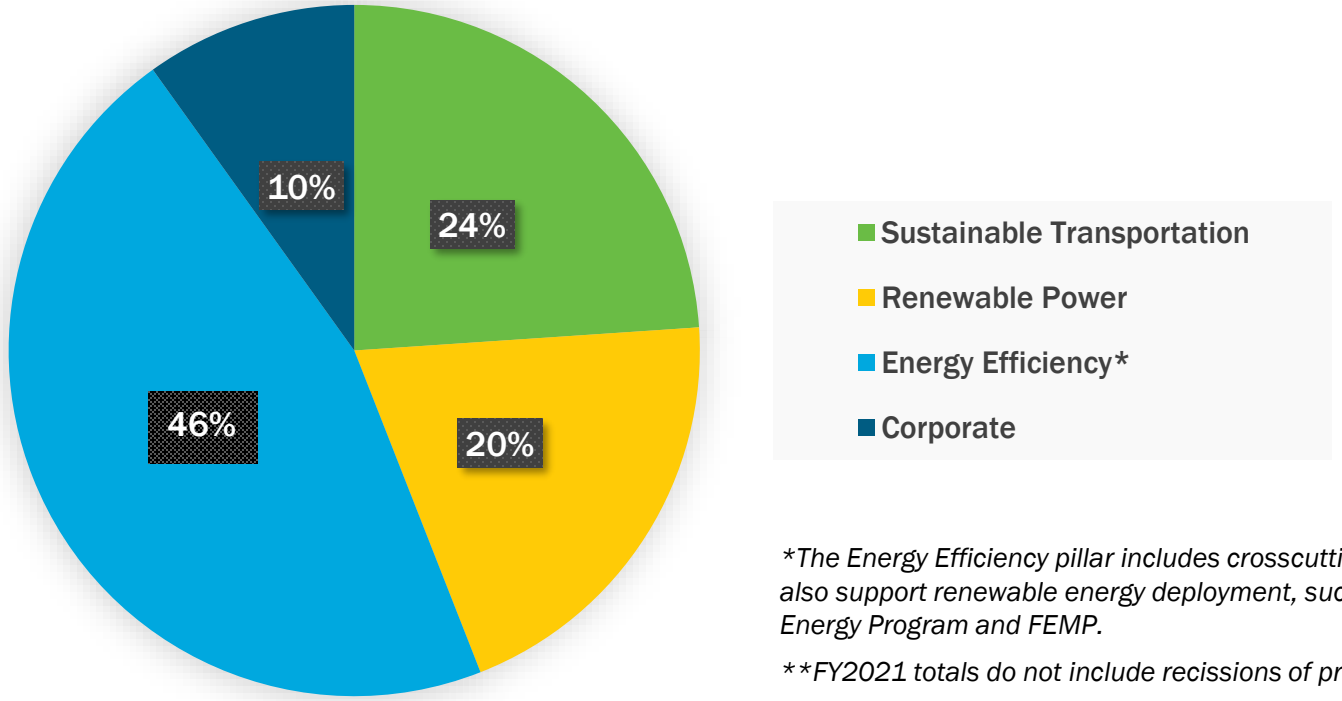
State and Local Partnerships

EERE Program Priorities

- Decarbonizing the electricity sector
- Decarbonizing transportation across all modes
- Decarbonizing energy-intensive industries
- Reduce the carbon footprint of buildings
- Decarbonizing the agriculture sector, specifically focused on the nexus between energy and water

EERE FY 2022 Request Summary

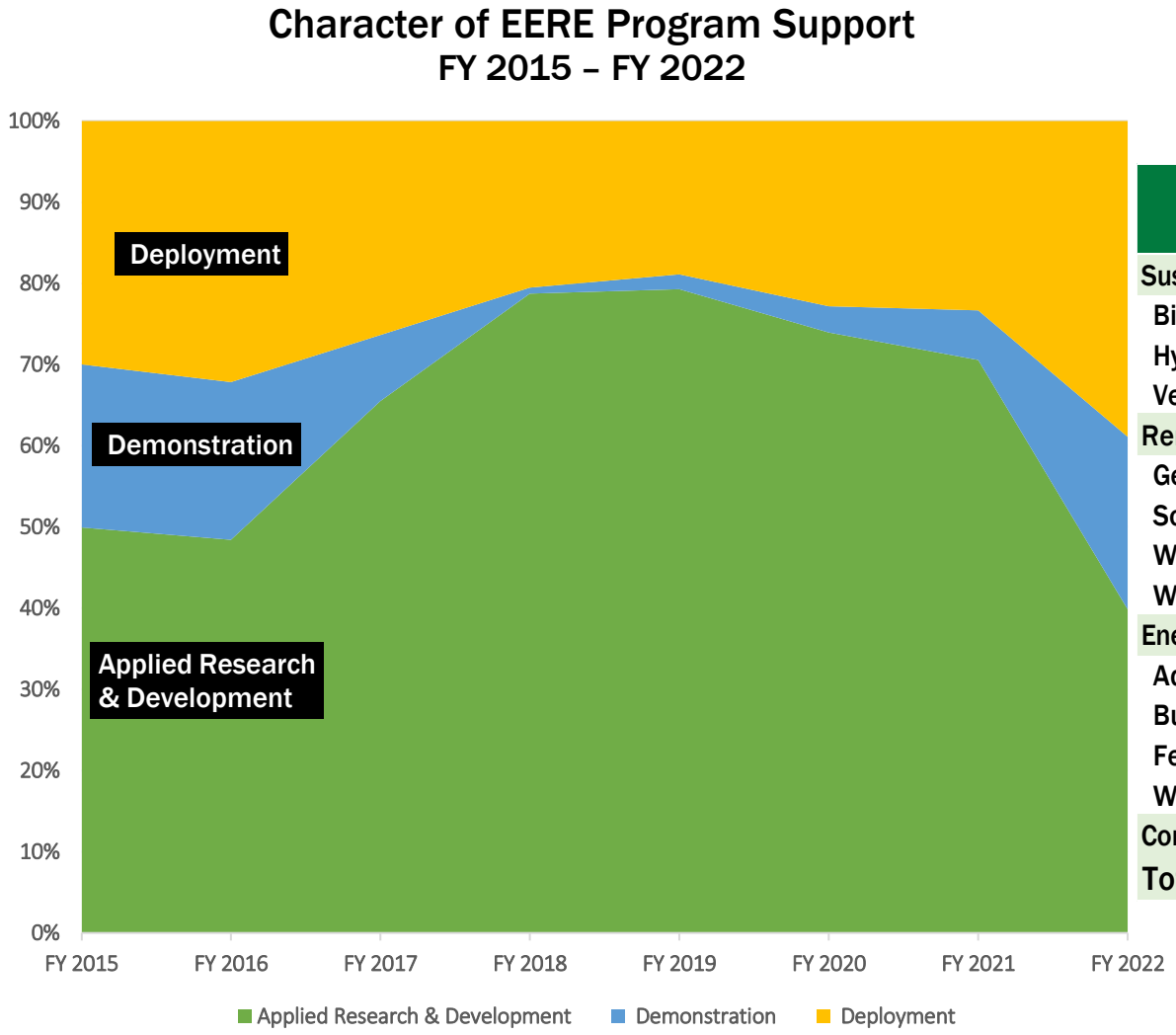
EERE Programmatic Pillar (dollars in thousands)	FY 2021 Enacted	FY 2022 Request	Increase/ Decrease	Percent Increase
Sustainable Transportation	805,000	1,132,500	327,500	41%
Renewable Power	646,000	951,765	305,765	47%
Energy Efficiency	1,103,500	2,179,150	1,075,650	97%
Corporate Support Programs	309,500	468,585	159,085	51%
Total, EERE	2,864,000	4,732,000	1,868,000	65%



*The Energy Efficiency pillar includes crosscutting programs that also support renewable energy deployment, such as the State Energy Program and FEMP.

**FY2021 totals do not include recissions of prior year balances

EERE's FY 2022 Request prioritizes demonstration & deployment



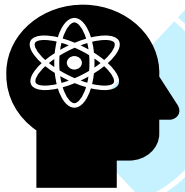
EERE Budget Program	FY 2022 Request (dollars in thousands) Deployment	Demonstration	Applied Research & Development
Sustainable Transportation	51,760	354,660	726,080
Bioenergy Technologies	1,200	110,350	228,450
Hydrogen and Fuel Cells	1,000	88,600	107,900
Vehicle Technologies	49,560	155,710	389,730
Renewable Power	155,197	250,589	545,979
Geothermal Technologies	11,875	48,625	103,260
Solar Energy Technologies	57,850	66,250	262,475
Wind Power Technologies	70,472	36,303	98,095
Water Power Technologies	15,000	99,411	82,149
Energy Efficiency	1,450,977	301,131	427,042
Advanced Manufacturing	62,298	241,000	247,202
Building Technologies	142,029	60,131	179,840
Federal Energy Management Program	438,150	-	-
Weatherization and Intergovernmental Programs	808,500	-	-
Corporate Support Programs	NA	NA	NA
Total, EERE	1,657,934	906,380	1,699,101

EERE Emphasis Areas to Ensure the Greatest Impact

Including Examples from FY 2022 Request Investments

Energy and Environmental Justice

- *Hydrogen* - Analytical research that assesses regional impacts of hydrogen and fuel cell technologies (e.g., criteria pollutants, water), to inform environmental justice goals and support energy communities
- *Wind* - Research to understand socioeconomic impacts of wind energy development to develop solutions to promote equity and benefits, especially for energy communities
- *EERE-wide*: Multi-office energy transition initiative (ETI) that specifically looks to support clean energy transition in underserved and energy communities through long term, community driven approaches



Diversity in STEM

- *EERE-Wide* - Coordinated workforce training for clean energy technologies including solar and expansion of successful training models nationwide
- *EERE-Wide* - efforts to expand STEM pipeline development programs and new research partnerships among underutilized Minority Serving Institutions across the country.
- *Buildings* – Initiate a Minority-Serving STEM R&D Consortium focused on next generation lighting technologies

Workforce Development

- *Advanced Manufacturing* - Workforce Development activity that supports participants at varying career levels, engages underserved and energy communities and integrates activities across AMO programs and partner offices
- *Vehicles* - The EcoCAR Mobility Challenge, a university student competition that provides science and technology training for the future advanced automotive workforce

State & Local Partnerships

- *EERE-wide* - Clean Energy for Local Governments program to provide competitive awards to support the development and deployment of transformative clean energy programs of qualifying local governments, such as disadvantaged and energy communities
- *Solar* - The National Community Solar Partnership, which provides technical assistance to businesses, non-profit organizations, and state, local and tribal governments to expand access to affordable community solar, especially in energy communities

Energy Efficiency

Key EERE Priorities Enabled:

Industry

Buildings

Grid

RDD&D focused on the **resilience of homes and buildings** and strengthening U.S. **manufacturing competitiveness.**

(dollars in thousands)	FY 2021 Enacted	FY 2022 Request	$ Change	% Change
Advanced Manufacturing	396,000	550,500	+154,500	39%
Federal Energy Management Program	40,000	438,150	+398,150	995%
Building Technologies	290,000	382,000	+92,000	32%
Weatherization and Intergovernmental Programs	377,500	808,500	+431,000	114%

Increase energy efficiency, demand flexibility and grid-connectivity for the 125 million U.S. homes and commercial buildings.

- Launch next generation of Connected Communities scaling low-carbon building solutions to support renewables integration & provide demand flexibility.
- Advancement of building energy codes and appliance standards.

Reduce energy burden for low-income households across the U.S.

- Increased funding to weatherize at least 50,000 homes per year and create a new Weatherization Readiness Fund to enable more low-income Americans to receive Weatherization Assistance by providing funds to address structural and health and safety issues.
- Launch a Build Back Better Challenge Grants ($300M) supporting novel clean energy deployment approaches in communities through the State Energy Program.
- Initiate competitively awarded technical assistance grants for local governments.

Lead by example in reducing the carbon footprint of federal government buildings.

- Increased investments for deep retrofits of federal buildings and facilities smart building technologies, and geothermal installations.
- Technical assistance to transition federal agencies to carbon-free electricity and for federal fleet electrification, including procurement and installation of charging infrastructure.

Reduce carbon impacts from energy intensive industries through improved processes and materials while ensuring the U.S. manufacturing sector is competitive

- Substantial increase for industrial decarbonization efforts including industrially relevant RDD&D of emerging zero-carbon technologies for steel, cement, and chemical manufacturing as well as funding for two new Clean Energy Manufacturing Institutes.
- Support to revitalize the U.S manufacturing sector to be agile, resilient, and responsive through a new emphasis on infrastructure for agile manufacturing and support for workforce development activities.

Energy Efficiency (EE)

Advanced Manufacturing – FY 2022 Request

AMO invests in applied research, development, and demonstration (RD&D) in crosscutting, platform technologies to decarbonize the industrial sector and promote the development and growth of a resilient manufacturing sector for multiple emerging energy fields.

Subprogram (in thousands)	FY 2021 Enacted	FY 2022 Request	FY 2022 vs. FY 2021	% Change
Materials	80,559	85,059	+4,500	+6%
Manufacturing Innovations	233,644	367,643	+133,999	+57%
Energy Systems	46,500	50,500	+4,000	+9%
Manufacturing Enterprise	35,297	47,298	+12,001	+34%
Total	**396,000**	**550,500**	**+154,500**	**+39%**

FY 2022 Emphasis Areas

- AMO is focusing on industrial sector decarbonization to address the climate crisis.
- AMO is also investing in the innovations required to manufacture at scale the clean energy technologies needed to decarbonize other sectors, including transportation, buildings, and the electric grid.
- Targeted investments in demonstration activities are used to address key scale-up and manufacturing challenges in order to accelerate deployment and broad adoption, especially in decarbonization of energy-intensive industries.
- Equitable access to technical assistance and career opportunities, with a focus on underserved communities, energy communities, and tribal communities.

Advanced Manufacturing – FY 2022 Highlights & Major Changes

- **Industrial Decarbonization Demonstrations ($80M)** - supporting industrially-relevant testbeds and demonstrations in energy- and carbon- intensive sectors (e.g., steel, cement, chemicals)
- **Critical Minerals ($70M)** – Support new lab-industry consortium to de-risk and validate successful technology innovations for critical minerals, including test-bed facilities to scale up technology solutions around identified gaps such as metal conversion or magnet manufacturing.
- **Energy Storage Grand Challenge ($41M)** – Collaborate with multiple offices, including the Office of Electricity, the Vehicle Technologies Office, and the Hydrogen and Fuel Cell Technologies Office on projects that overcome the manufacturing barriers of innovative integrated energy storage systems that meet the performance requirements for multiple applications, including grid, vehicle, and industry.
- **Workforce Development ($33.5M)** - Strengthen / expand existing workforce development programming to increase diversity at all levels, improve career paths, and further support entrepreneurship.
- **Manufacturing USA Institutes ($42M)** - continue support for a seventh Institute, establish additional Institutes to support the U.S. manufacturing sector in industrial decarbonization, reducing their energy use intensity, and incorporating resiliency systems into their operations.

Federal Energy Management Program – FY 2022 Request

FEMP provides technical assistance, technology integration and demonstration and partners with the Council on Environmental Quality and the Office of Management and Budget in the formulation of policy and guidance and Federal Facility rulemaking to support Federal agencies efforts to meet Executive Orders and statutory energy and water management-related requirements

Subprogram (dollars in thousands)	FY 2021 Enacted	FY 2022 Request	FY 2022 vs. FY 2021	% Change
Federal Energy Management Program	40,000	438,150	+398,150	+995%
Total	**40,000**	**438,150**	**+398,150**	**+995%**

FY 2022 Emphasis Areas:

- Lead by Example: Upgrade Federal energy and water infrastructure
  - Leverage Performance Contracting
  - Demonstrate and deploy energy efficient, sustainable, resilience and secure technologies to ensure continuous mission operations across the USG
- Technical Assistance: Support Federal agency implementation of Executive Orders and statutory related energy and water requirements
  - Federal building stock decarbonization
  - Federal Fleet Electrification
  - Technology Integration
- Regulatory and Statutory Requirements: EO and statutory reporting requirements
- Workforce Development: Support efforts to prepare the next generation of federal energy and water professionals needed to create a low-carbon building stock and an electrified federal fleet

Federal Energy Management – FY 2022 Highlights and Major Changes

AFFECT ($400M):

- Significantly increase to Federal Energy Efficiency Fund (FEEF) Program (+ $387 million)
- Provides direct funding to Federal agencies for the development of energy and water efficiency projects and processes that address climate change mitigation and/or adaptation.
  - Leverage performance contracting
  - Generate private sector resources that will significantly exceed the initial grant investments.

Workforce Development ($2.3M):

- Continue to provide free accredited training to energy and management professionals and participate in the EERE wide workforce EMPOWER FOA.

Technical Assistance ($31.7M):

- Federal Agency Fleet Electrification—increased funding will support technical assistance for charging and fleet electrification including development, validation, and deployment.

- Federal Smart Buildings —increased funding will support technical assistance to accelerate the adoption and use of smart building technologies and practices through validation, demonstration, and deployment across the Federal building stock.

- Partner with the National Park Service and the Department of Energy to demonstrate viability of electrification and decarbonization energy and water management strategies utilizing integrated FEMP services approach.

- PCNRC will be operational, providing training and resources to State and Local governments to expand performance-based contracting in their respective markets.

Building Technologies – FY 2022 Request

Building Technologies supports R&D, deployment, regulatory, other investments to increase the energy efficiency and demand flexibility of homes and commercial buildings – and thus significantly decarbonize them.

Subprogram (dollars in thousands)	FY 2021 Enacted	FY 2022 Request	FY 2022 vs. FY 2021	% Change
Emerging Technologies	145,000	174,000	+29,000	+20%
Commercial Buildings Integration	50,000	74,000	+24,000	+48%
Residential Buildings Integration	40,000	72,000	+32,000	+80%
Equipment and Buildings Standards	55,000	62,000	+7,000	+13%
Total	290,000	382,000	+92,000	**+32%**

FY 2022 Emphasis Areas

- R&D and deployment activities focus on breaking down barriers and identifying opportunities to innovate the energy efficient technologies that impact the largest energy demands within buildings: lighting, space conditioning, refrigeration, water heating, appliances, and miscellaneous electric loads, as well as the building envelopes (including windows, insulation, etc.) themselves.
- RDD&D on advanced and grid-interactive controls and strategies (including thermal energy storage) to strengthen the body of knowledge to support industry to develop and deploy grid-interactive efficient buildings capable of connecting with the power grid in new, increasingly adaptive manners to help overall energy system efficiency, reliability, environmental performance, energy affordability; these capabilities are an integral part of a decarbonized power system.
- Emphasis on developing market transformation initiatives focused on accelerating the transition to a low-to-no-net carbon energy economy. Investing in "locking in" savings that have been realized by RDD&D and market transformation via appliance and equipment standards and building energy codes.
- Spur energy equity by developing and deploying solutions that address needs of disadvantaged populations by reducing utility bills and first cost of energy-saving technologies. This work is essential to ensuring that all Americans can benefit from affordable, high-performing homes and commercial buildings.

Building Technologies – FY 2022 Highlights & Major Changes

- **Appliance & Equipment Standards and Building Codes ($62M):** meet its statutorily mandated deadlines for covered appliances and equipment and building energy codes.
- **Grid Interactivity & Modernization and Renewables Integration ($82M):** focus on research and development to improve the state of technology, deploy data and best practices, and demonstrate examples that support industry efforts to connect with the power grid in new and increasingly adaptive manners.
- **Advanced Building Construction (ABC) ($20M):** transform the U.S. market for modernized, highly-productive, modular & prefabricated, low-carbon building construction and renovation by collaborating with key building industry stakeholders to inform ongoing R&D projects, and to prime the market for the integration of high efficiency solutions and evolving approaches in new construction and renovation.
- **E3 Initiative for Better Energy, Emissions, and Equity ($10M):** support research, development and demonstration (RD&D) for new and existing, affordable greenhouse gas (GHG)-free heating and cooling solutions and market transformation activities to accelerate the adoption of grid-interactive heat pump (HP) technologies and deploy strategies and resources to reduce emissions attributed to building equipment including fossil-fueled equipment and refrigerants.
- **Climate and Clean Energy Partnerships for Local Governments: ($20M)** partner with Weatherization and Intergovernmental Programs Office (WIP), provide competitive awards and various types of technical assistance (e.g., onsite capacity, peer exchanges) to local governments to support the development and deployment of transformative clean energy programs, with an emphasis on small to medium jurisdictions and disadvantaged communities.
- **Workforce Development & Education ($25M):** prepare next generation of professionals, tradespersons and others needed to create a low-carbon, modernized U.S. building stock by augmenting training programs to improve skills of tradespersons and professionals, build interest in these careers (especially w/under-represented groups), streamline pathways from education and training to viable careers. Additional focus on providing opportunities to those in communities w/greatest employment needs, incl. those from legacy energy jobs.

Weatherization & Intergovernmental Programs – FY 2022 Request

Weatherization and Intergovernmental Programs Office (WIP) partners with state and local organizations to significantly accelerate the deployment of clean energy (e.g., energy efficiency and renewable energy) technologies and practices through place-based strategies involving a wide range of government, community, and business stakeholders and through capacity building.

Subprogram (in thousands)	FY 2021 Enacted	FY 2022 Request	FY 2022 vs. FY 2021	% Change
Weatherization Assistance	315,000	400,000	+85,000	+27%
Training and Technical Assistance	*5,000*	*10,000*	*+5,000*	*+100%*
Weatherization Readiness Fund	0	21,000	+21,000	-
State Energy Program	62,500	362,500	+300,000	+480%
Local Government Clean Energy Workforce Program	0	25,000	25,000	-
Total	**377,500**	**808,500**	**431,000**	**+114%**

FY 2022 Emphasis Areas

- Build and expand capacity through technical assistance and new programs to ensure efficient and effective execution of the proposed American Jobs Plan block grant funding.
- Support EERE's goal to accelerate the research, development, demonstration, and deployment (RDD&D) of innovative technologies that will achieve net-zero greenhouse gas emissions, economy-wide, by no later than 2050 and ensure the clean energy economy benefits all Americans.

Weatherization & Intergovernmental Programs – FY 2022 Highlights and Major Changes

Weatherization Assistance Program ($421M): helps eligible low-income households reduce the comparatively large percentage of available income that they spend on energy. Highlights include:

- $400 million in formula grants and training to support completion of approximately 50,000 low-income residential energy retrofits, which is a down payment on the Administration's commitment in the American Jobs Plan to retrofit 2 million homes;
- Establishment of a $21 million “Weatherization Readiness Fund” to address structural or health and safety repairs needed to low-income homes that are not provided for under current WAP funding allocations;
- Exploration and development of methodologies to estimate non-energy impact savings and evaluation of the feasibility of including them in determining inclusion of energy conservation measures in WAP retrofits;
- WAP Enhancement and Innovation funds of up to 6 percent (up to a maximum of $25 million) to competitively select and manage projects on improvements in indoor air quality, advanced technologies, and workforce development;
- Sustainable Energy Resources for Consumers (SERC) awards of up to 2 percent of WAP funding (approximately $8.0 million) for installation of renewable technologies in low-income dwellings;
- Continued improvements in workforce training, quality standards, and worker certification to improve the quality of the work performed;
- Equitable statewide distribution review of DOE WAP funds to understand the energy burden on a by county basis and development of best practices and tools to assist state-level staff in making allocation decisions; and
- Development of targeted resources to further quality installation of energy conservation measures, focus on workforce development, and coordination with other funding streams through existing interagency working group.

Weatherization & Intergovernmental Programs – FY 2022 Highlights and Major Changes

State Energy Program ($362.5M): Continue to support existing programs to advance innovation in state energy offices and dissemination of best practices and launch challenge grant program to incubate novel approaches.

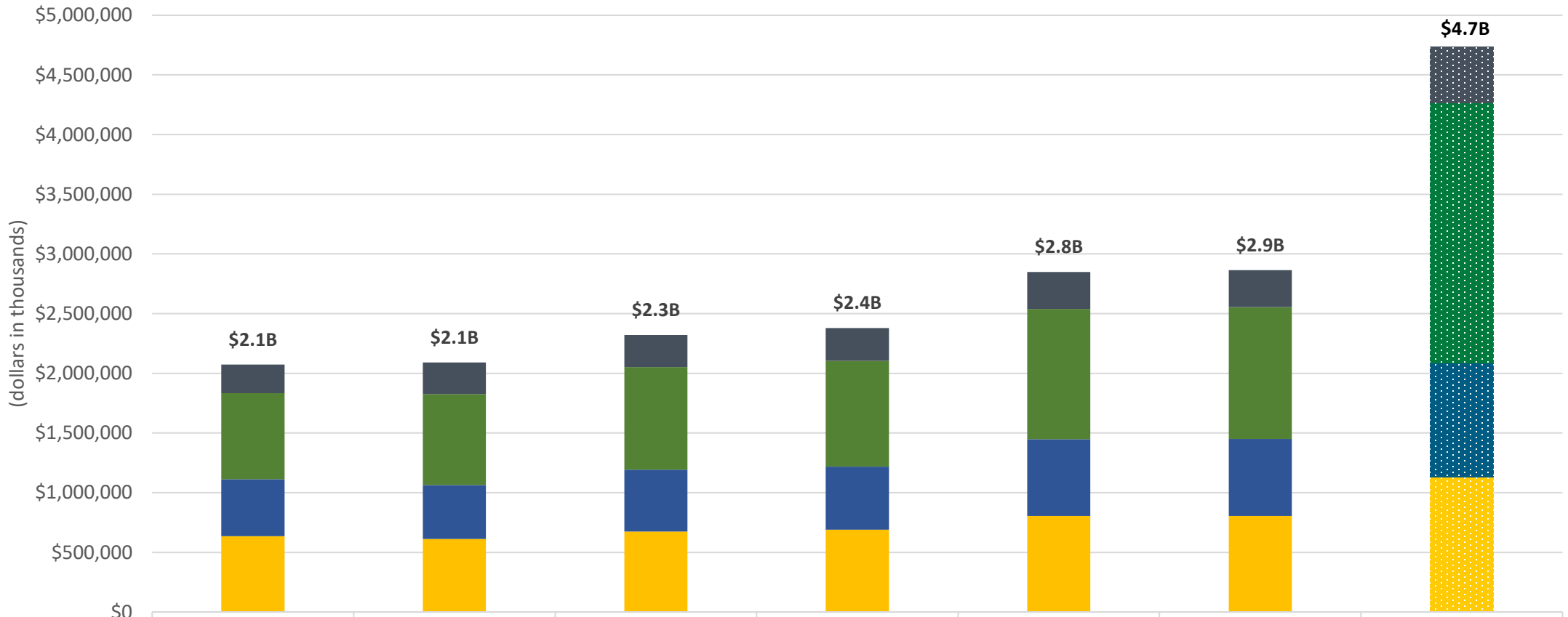
- Continue to support traditional formula-based grants to U.S. states, Washington, D.C., and 5 U.S. Territories and advance innovation in state energy offices and dissemination of best practices; maintain a portfolio of diverse energy efficiency and renewable energy programs and policies through an active network of state energy offices with the capacity to develop, improve, and implement these initiatives through the provision of funding through formula grants;
- Provide targeted technical assistance to states to advance transformative solutions for reducing energy use in government facilities; accelerating investment in public sector use of energy service performance contracts; and supporting high-impact projects focused on development and implementation of state policies addressing barriers limiting investment in energy efficiency and renewable energy, including self-sustaining financing models; and
- Design and launch the **Build Back Better Challenge Grants ($300M)** program to incubate novel approaches to clean energy technology deployment, prioritizing investments that meet energy needs at the local level, and are inclusive in elevating impoverished and disenfranchised communities, and/or communities that have been marginalized or overburdened.

Local Government Clean Energy Workforce Program ($25M): EERE seeks to establish a new program to:

- Provide targeted competitive awards, on-site capacity, peer exchanges, and technical assistance to support the development and deployment of transformative clean energy programs of qualifying local governments that create good paying jobs, with a focus on disadvantaged and small-to-medium jurisdictions;
- Operate in partnership between EERE's Weatherization and Intergovernmental Programs Office (WIP) and Building Technologies Office (BTO), and in coordination across DOE and other Federal agencies as appropriate; and
- Empower American cities, counties, and communities with high impact, place-based low-carbon solutions tailored to their needs, and developing and using a local workforce, with a focus on local clean energy programs that target environmental justice and workforce development outcomes.

Questions

EERE Appropriations by Sector, FY 2016 – FY 2022



	FY 2016 Enacted	FY 2017 Enacted	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request
Corporate Support	$238,000	$264,500	$268,000	$273,500	$309,500	$309,500	$468,585
Energy Efficiency	$721,000	$761,641	$858,727	$888,000	$1,091,000	$1,103,500	$2,179,150
Renewable Power	$478,050	$451,040	$519,306	$527,500	$642,000	$646,000	$951,765
Sustainable Transportation	$635,450	$612,959	$674,045	$690,000	$805,500	$805,000	$1,132,500
Total, EERE	$2,072,500	$2,090,140	$2,320,078	$2,379,000	$2,848,000	$2,864,000	$4,732,000

EERE totals do not include recissions of prior year balances.

Budget Summary

EERE Programs	FY 2020 Enacted ($K)	FY 2021 Enacted ($K)	FY 2022 Request ($K)
Sustainable Transportation	**805,500**	**805,000**	**1,132,500**
Vehicle Technologies	396,000	400,000	595,000
Bioenergy Technologies	259,500	255,000	340,000
Hydrogen and Fuel Cell Technologies	150,000	150,000	197,500
Renewable Power	**642,000**	**646,000**	**951,765**
Solar Energy Technologies	280,000	280,000	386,575
Wind Energy Technologies	104,000	110,000	204,870
Water Power Technologies	148,000	150,000	196,560
Geothermal Technologies	110,000	106,000	163,760
Energy Efficiency	**1,091,000**	**1,103,500**	**2,179,150**
Advanced Manufacturing	395,000	396,000	550,500
Federal Energy Management Program	40,000	40,000	438,150
Building Technologies	285,000	290,000	382,000
Weatherization and Intergovernmental Programs	371,000	377,500	808,500
Corporate Support	**309,500**	**309,500**	**468,585**
Program Direction	165,000	165,000	250,000
Strategic Programs	14,500	14,500	43,585
Facilities and Infrastructure (NREL)	130,000	130,000	175,000
Subtotal, EERE	**2,848,000**	**2,864,000**	**4,732,000**
Rescission of Prior Year Balances*	(58,000)	(2,240)	
Energy Program Rescission*	(12,723)		
Total, EERE	**2,777,277**	**2,861,760**	**4,732,000**

**Note: Rescissions affect Prior Year Balances rather than FY 2020 Enacted Budgetary Authority*

EERE-Wide Investments: Energy Storage Grand Challenge

What

- A comprehensive program to accelerate the development, commercialization, and utilization of energy storage technologies at the scale necessary for the U.S. to reach its decarbonization goals.
- Demonstrate and validate existing technologies for new uses, and develop, prove safe and effective, and commercialize and scale up manufacturing for new technologies within the next 5-10 years.

Why

- Energy storage technologies are critical to decarbonizing the energy sector, whether for the power sector, transportation, buildings, or industrial end use; they are also critical to strengthen the reliability and resilience of the grid.
- Attain and sustain global leadership in energy storage manufacturing, utilization, and exports, with a secure, resilient domestic supply chain

How

- Promote coordination across DOE to address challenges from a system-level, rather than a technology-specific perspective; leverage DOE and National Lab capabilities
- Leverage a variety of funding strategies to accelerate innovation across a range of storage technologies based on three concepts: Innovate Here, Make Here, Deploy Everywhere. Address associated scale up challenges.

(dollars in thousands)	FY 2021 Enacted	FY 2022 Request	FY 2022 vs. FY 2021
Energy Storage Grand Challenge	**327,292**	**457,900**	**+130,608**

Participating EERE Offices: *Advanced Manufacturing, Building Technologies, Geothermal Technologies, Hydrogen and Fuel Cell Technologies, Solar Energy Technologies, Strategic Programs, Vehicle Technologies, Water Power Technologies, Wind Energy Technologies*

EERE-Wide Investments: Grid Modernization Initiative

What

- Work across the U.S. Department of Energy to help create the modern grid of the future.
- Focus on efforts to support new architectural concepts, tools, and technologies to measure, analyze, predict, protect, and control the grid of the future, and on enabling the institutional conditions that allow for more rapid development and widespread adoption of these tools and technologies.
- Efforts to integrate the nation's electricity to improve reliability, resiliency, security, affordability, sustainability, and flexibility.

Why

- Our extensive, reliable power grid has fueled the nation's growth since the early 1900s; however, the grid we have today does not have the attributes necessary to meet the demands of the 21st century and beyond.

How

- Since 2013 over $330M of research funding has been highly coordinated and implemented across multiple offices, using a multi-year strategy as a guiding roadmap to grid modernization efforts.
- Under GMI, the Grid Modernization Laboratory Consortium (GMLC) was established as a strategic partnership between DOE and the national labs to bring together leading experts, technologies, and resources to collaborate on the goal of modernizing the nation's grid.

(dollars in thousands)	FY 2021 Enacted	FY 2022 Request	FY 2022 vs. FY 2021
Grid Modernization Initiative	**188,950**	**299,110**	**+110,160**

***Participating EERE Offices**: Advanced Manufacturing, Building Technologies, Hydrogen and Fuel Cell Technologies, Solar Energy Technologies, Vehicle Technologies, Water Power Technologies, Wind Energy Technologies*

EERE-Wide Investments: Critical Minerals Initiative

What

- A federal strategy for advancing transformational RD&D across the entire critical materials supply chain; strengthening America's critical mineral supply chains and defense industrial base; and growing the American critical minerals workforce.
- Partnership with government agencies, National Labs, industry stakeholders, and academia (EERE serves as the DOE co-chair of the National Science & Technology Council (NSTC) Critical Minerals Subcommittee (CMS))

Why

- Critical materials are used in many products important to the American energy economy, including clean energy technologies, but the U.S. imports most of our critical mineral commodities.
- The United States lacks downstream domestic processing and manufacturing capabilities for critical materials.
- To develop a sustainable and robust supply chain in the United States, we must innovate to reduce the costs of the materials and reduce the environmental impacts of production.

How

- DOE's R&D strategy for addressing critical materials has three pillars: diversify supply, develop substitutes, and drive recycling, reuse, and more efficient use of critical minerals.
- Leverage the expertise related to this area across the DOE National Laboratory complex as well as encompass all efforts across the Applied Energy Offices and the Office of Science.
- EERE is leading interagency efforts to develop an R&D roadmap to enhance scientific and technical capabilities across the entire critical materials supply chain.

(dollars in thousands)	FY 2021 Enacted	FY 2022 Request	FY 2022 vs. FY 2021
Critical Minerals Initiative	104,300	160,150	+55,850

Participating EERE Offices: *Advanced Manufacturing Office, Geothermal Technologies, Hydrogen and Fuel Cell Technologies, Vehicle Technologies*

EERE-Wide Investments: Energy-Water Nexus

What

- An initiative encompassing technology RDD&D, modeling and assessment tools, technical support, informed policy, planning tools, and workforce development to replace America's outdated and deteriorating water infrastructure across municipalities, industry, utilities, agriculture, and resource extraction with one that is more sustainable, climate adaptive, and equitable for the 21st century and beyond.

Why

- Our Nation's large scale, centralized water infrastructure based on a linear model of fresh water served us well in the 20th century, but it is breaking down under new pressures, due to climate change, increased competition for water resources, an aging water infrastructure, and regulatory hurdles.

How

- Launch desalination technologies that deliver cost-competitive clean water.
- Transform the energy sector's produced water from a waste to a resource.
- Achieve near-zero water impact for new thermoelectric power plants, and significantly lower freshwater use intensity within the existing fleet.
- Double resource recovery from municipal wastewater.
- Develop small, modular energy-water systems for urban, rural, tribal, national security, and disaster response settings.

(dollars in thousands)	FY 2021 Enacted	FY 2022 Request	FY 2022 vs. FY 2021
Energy-Water Nexus	66,350	78,500	+12,150

EERE Participating Offices: *Advanced Manufacturing Office, Bioenergy Technologies, Solar Energy Technologies, Water Power Technologies, Weatherization and Intergovernmental Programs*