

# FY 2022 Request Overview Briefing

June 2021



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# FY 2022 Request Strategy

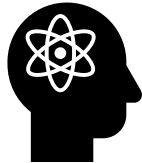
Accelerate the research, development, demonstration, and deployment of technologies and solutions to equitably transition America to a carbon pollution-free electricity sector by 2035 and a economy by no later than 2050, creating good-paying jobs with the free and fair chance to join a union, and ensuring 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

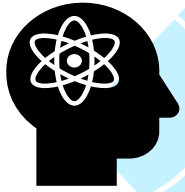
# EERE Emphasis Areas to Ensure the Greatest Impact

## 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

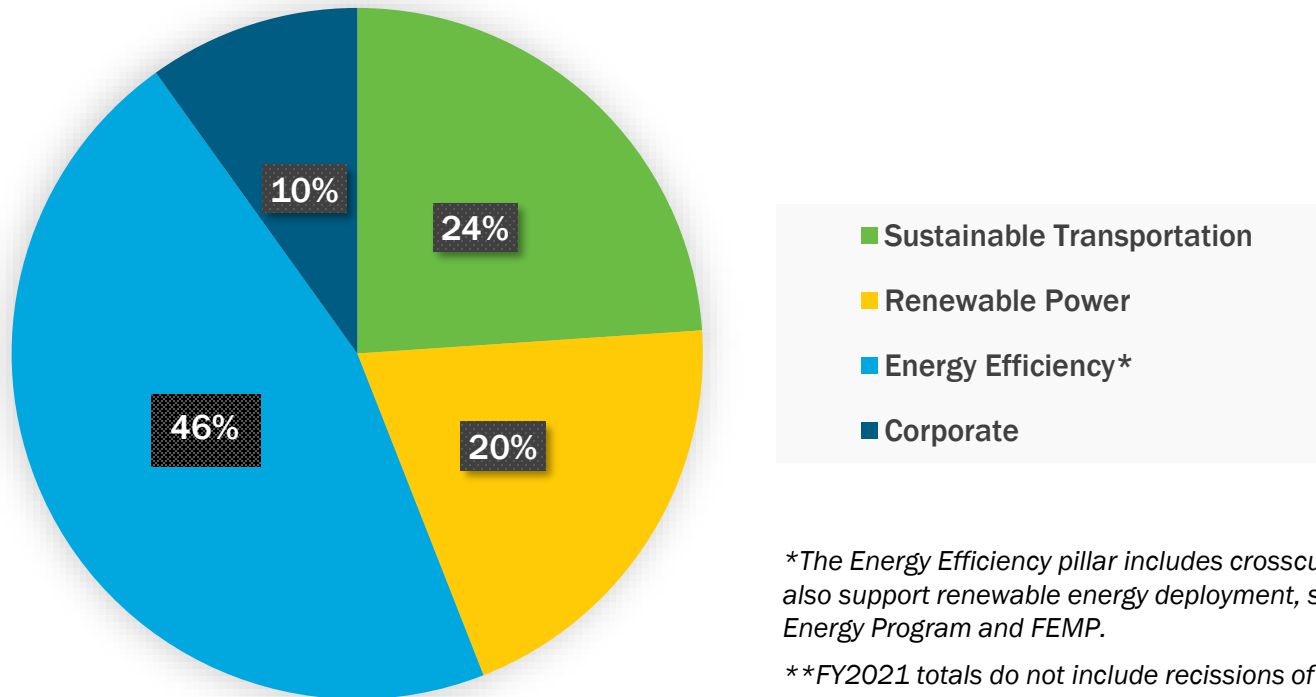


### State & Local Partnerships

- *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

# 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%
<b>Total, EERE</b>	<b>2,864,000</b>	<b>4,732,000</b>	<b>1,868,000</b>	<b>65%</b>

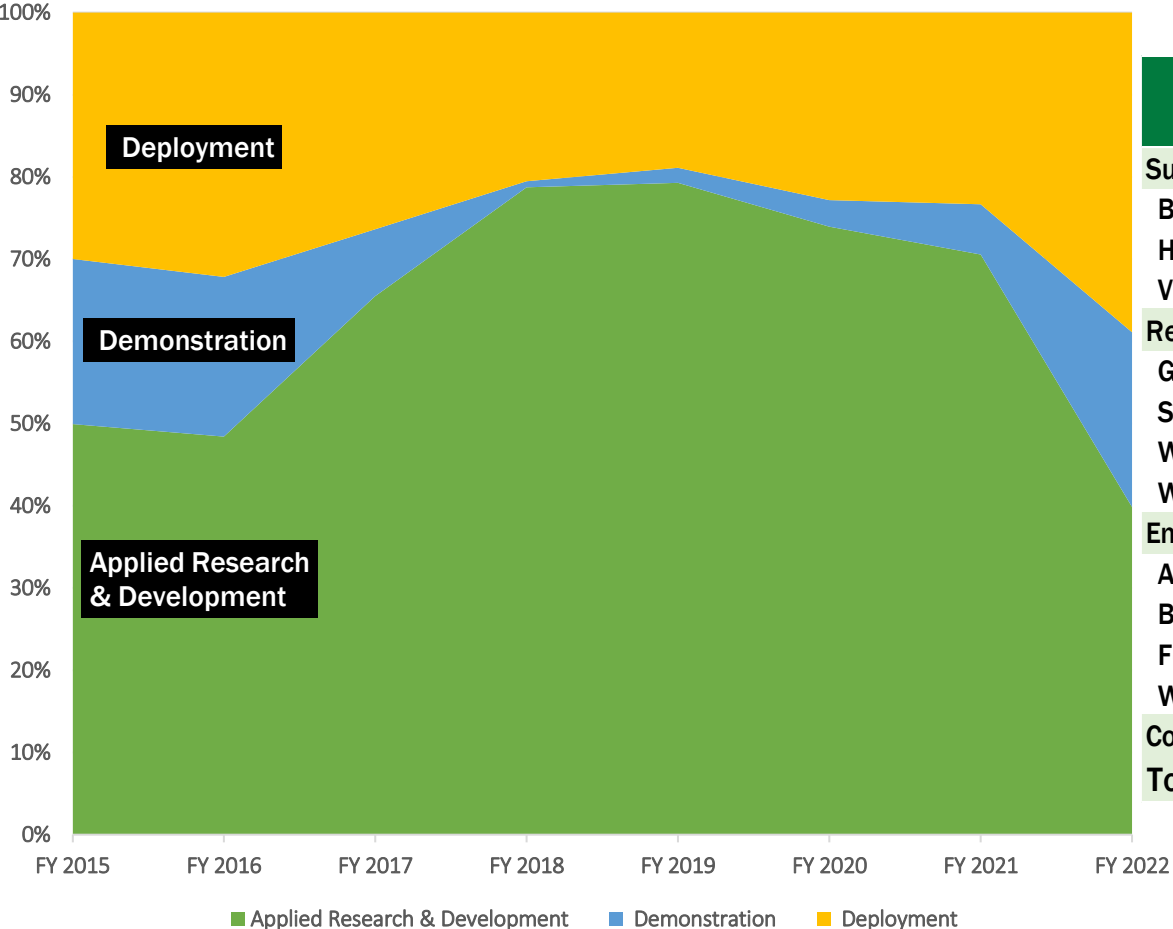


\*The Energy Efficiency pillar includes crosscutting programs that also support renewable energy deployment, such as the State Energy Program and FEMP.

\*\*FY2021 totals do not include rescissions of prior year balances

# EERE's FY 2022 Request prioritizes demonstration & deployment

Character of EERE Program Support  
FY 2015 – FY 2022



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
<b>Total, EERE</b>	<b>1,657,934</b>	<b>906,380</b>	<b>1,699,101</b>

# Renewable Power

RDD&D efforts in solar, wind, water, and geothermal power to help **reduce the costs** and accelerate the use and **integration of renewables**, contributing to a **reliable, secure, and resilient grid**.

(dollars in thousands)	FY 2021 Enacted	FY 2022 Request	\$ Change	% Change
Solar Energy Technologies	280,000	386,575	+106,575	38%
Wind Energy Technologies	110,000	204,870	+94,870	86%
Water Power Technologies	150,000	196,560	+46,560	31%
Geothermal Technologies	106,000	163,760	+57,760	54%

**Key EERE Priorities Enabled:**

- Grid
- Industry
- Agriculture
- Buildings

**Accelerate deployment of renewable energy technologies by addressing market and regulatory questions, minimizing environmental and social impacts, and ensuring projects benefit local communities**

- Provide integrated, cross-office support to utilities, regulators, and state-local government in planning and operating high-renewables power systems
- Establish a national platform for low-income solar access to spur rooftop solar adoption, particularly in low-income communities
- Support environmental research and community engagement to accelerate permitting and adoption of utility-scale wind on land and offshore.

**Support U.S. manufacturing and secure supply chains to deliver new clean energy careers and eliminate dependence on vulnerable or unsustainable materials**

- Increased support for prize competitions designed to spur U.S. business innovation in solar.
- Support for a new EERE-wide initiative designed to support a qualified U.S. clean energy manufacturing workforce.

**Drive cost reductions to ensure renewable energy is a least-cost generation option across the entire country by 2030**

- Increase support for demonstration and validation of innovative technologies such as stationary energy storage, essential for attracting investment in renewables
- Support to demonstrate new geothermal drilling technologies to accelerate the speed of drilling, reduce well costs, and engage the oil & gas sector in geothermal energy development.
- RD&D to develop larger, light-weight turbines that allow operation at greater heights, platforms, and turbine designs to enable ultra-large floating wind turbines to access deep water offshore wind.

**Integrate renewables into the grid to ensure a clean power system is reliable and resilient in the face of changing demand and external threats**

- Increased support for HydroWIRES (Water Innovation for a Resilient Electricity System) to increase the flexibility of hydropower and support new pumped storage.

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# Selected EERE-Wide Investments



# 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
<b>Energy Storage Grand Challenge</b>	<b>327,292</b>	<b>457,900</b>	<b>+130,608</b>

*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
<b>Grid Modernization Initiative</b>	<b>188,950</b>	<b>299,110</b>	<b>+110,160</b>

*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: 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

# Renewable Power (RP)

# Solar Energy – FY 2022 Request



The Solar Energy Program accelerates the research, development, demonstration and deployment of solar technologies in support of an equitable transition to a decarbonized power sector and energy system.

Subprogram (dollars in thousands)	FY 2021 Enacted	FY 2022 Request	FY 2022 vs. FY 2021	% Change
Concentrating Solar Power Technologies	60,000	60,000	-	-
Photovoltaic Technologies (formerly Photovoltaic R&D)	72,000	79,575	+7,575	+11%
Systems Integration	53,000	71,750	+18,750	+35%
Balance of Systems Soft Cost Reduction	35,000	75,250	+40,250	+115%
Manufacturing and Competitiveness	60,000	100,000	+40,000	+67%
<b>Total</b>	<b>280,000</b>	<b>386,575</b>	<b>+106,575</b>	<b>+38%</b>

## FY 2022 Emphasis Areas

- Accelerating solar deployment and associated job growth by reducing burdensome soft costs (e.g., interconnection, permitting and siting), increasing access to solar for low-income households, and providing workforce training.
- Development and demonstration of solar technologies' capabilities to support grid reliability, including essential grid services and cyber-security, and to pair with energy storage and other distributed energy resources to enhance community resilience, especially in underserved communities.
- Innovation in the full domestic supply chain for PV technology to increase the lifetime and reliability of PV systems, develop next generation technologies, and increase domestic solar manufacturing.
- Increased focus on technologies to decarbonize the industrial sector, including use of concentrating solar thermal power to drive thermochemical processes for industrial products.

# Solar Energy – FY 2022 Highlights and Major Changes



- **Workforce (\$20M):** National career accelerator to train and diversify the solar and clean energy workforce and build pathways for career placement and advancement in both solar installation and manufacturing.
- **Low-Income Solar Access to Community Solar (\$20M):** Develop an online platform available to states, utilities, and other stakeholders to manage the voluntary enrollment of low-income customers in community solar and reduce their household energy burden. The platform will also reduce acquisition and management costs of enrolling these customers in community solar.
- **PV Supply Chain (\$40M):** Develop and demonstrate PV technologies across the full supply chain with strong potential to grow the U.S. solar manufacturing sector and increase the share of domestic content in PV systems.
- **Grid Services from PV Systems (\$10M):** First-of-a-kind demonstrations of the provision of grid services from solar and wind technologies for an extended period time (>6 months) and use of the results to inform the planning and operation of the electric grid with increasing contributions from wind and solar.
- **Industrial Decarbonization (\$15M):** Leverage CSP technologies to support decarbonization of the industrial sector through research and development of solar thermochemical processes and components to produce solar-derived industrial products, chemicals, and fuels.

# Wind Energy Technologies Office – FY 2022 Request



The Wind Technologies Office (WETO) supports a portfolio of research and innovation designed to accelerate technological advancement and deployment of offshore, land-based, and distributed wind energy technologies and their integration with the electric grid.

Subprogram (dollars in thousands)	FY 2021 Enacted	FY 2022 Request	FY 2022 vs. FY 2021	% Change
Offshore Wind	63,200	100,260	+37,060	+59%
Land-Based Wind	31,800	40,000	+8,200	+26%
Distributed Wind	10,000	17,750	+7,750	+78%
Grid Integration & Analysis	5,000	46,860	+41,860	+837%
Systems Integration	0	0	0	-
STEM & Workforce Development	0	0	0	-
Data, Modeling, & Analysis	0	0	0	-
<b>Total</b>	<b>110,000</b>	<b>204,870</b>	<b>+94,870</b>	<b>+86%</b>

## FY 2022 Emphasis Areas

- Align with and realize the Administration’s goals of fully decarbonizing electricity by 2035, 30 GW of offshore wind by 2030, and a net-zero carbon economy by 2050.
- R&D strategies for scaling installed wind capacity from 122 GW today to over 500 GW by 2035, as proposed, call for acceleration in:
  - Cost reduction through scientific understanding and technology innovation, including advances in turbine technology, economies of scale (taller, lighter, and more powerful machines), wind plant optimization, novel platform concepts for floating wind in deep water, and enhancements for rural and distributed wind systems;
  - Discovering sustainable solutions to environmental and siting concerns for wildlife, radar interference, and social aspects of use-conflicts, and working with state and local partnerships to promote Environmental Justice and equitable benefits for all communities; and
  - Integrating all forms of wind energy with grid systems and facilitating a transformational shift in energy sourcing, transmission, power electronics and controls needed to ensure efficient, secure, reliable and resilient electric power in a new energy future.

# Wind Energy Technologies – FY 2022 Highlights and Major Changes



- **Environmental and Siting R&D (\$37.6M):** Research and development of solutions to reduce environmental and siting barriers to land-based and offshore wind, coordinated with DOE’s Solar and Water Programs on related efforts and issues, including support of social science and socioeconomic research to understand impacts of wind energy and provide objective information on the benefits and costs of wind development;
- **Floating Offshore Wind (\$20M):** Technology development to enable ultra-large floating wind turbines to access the 58 percent of U.S. offshore wind resources that are in in deep water, including the entire West Coast; improve resource characterization and forecasting specific to wind plant power generation; technology innovations to optimize wind plant performance and reliability, and breakthroughs to facilitate the next generation of rotors for tall wind applications;
- **Enabling Technologies for Offshore Wind Grid Integration (\$12.6M):** Research to assess transmission infrastructure requirements to maintain system reliability and ensure cost-effective transmission access for offshore wind, while identifying innovative solutions to provide advanced grid services and reduce costs; and
- **Accelerate All Wind Deployment (\$15M):** Advanced materials and manufacturing R&D to develop innovative solutions to scaling, reliability, transportation constraints, materials, and supply chain challenges to accelerate wind deployment of all types and optimize opportunities for domestic manufacturing.



# Water Power Technologies FY 2022 Request



The Water Power Technologies Office (WPTO) administers a broad portfolio of research, development, and demonstration activities to strengthen the body of scientific and engineering knowledge and support industry efforts to develop and deploy hydropower and marine energy technologies at all scales.

Subprogram (dollars in thousands)	FY 2021 Enacted	FY 2022 Request	FY 2022 vs. FY 2021	% Change
Hydropower Technologies	41,000	84,560	+43,560	+106%
Marine Energy Technologies	109,000	112,000	+3,000	+3%
<b>Total</b>	<b>150,000</b>	<b>196,560</b>	<b>+46,560</b>	<b>+31%</b>

## FY 2022 Emphasis Areas

- Strengthen hydro's role as a flexible, firm asset on the grid by expanding analytical tools, technology development, and administration of tech assistance to bolster efforts for hydro fleet operators and pumped storage hydro to enable more solar and wind on the grid. This also includes expanding research to understand the future of hydro in the face of climate change, including hydrologic impact assessment, and strengthening the environmental portfolio.
- Develop the R&D, technologies, and demonstration programs to expand hydro's role in powering nonpowered dams, including to serve new markets like irrigation modernization, and demonstration of additional values of hydropower.
- Build on work to provide technical assistance to climate-impacted communities through the Energy Transition Initiative Partnership Project (ETIPP) and ensure programs across the portfolio increase equity and address diversity.
- Continue work to drive down costs of marine energy by investing in advanced materials and controls, foundational R&D at universities, supporting entrepreneurship, and demonstrating systems to meet near-term blue economy markets.
- Across the portfolio, invest in STEM, workforce development, and partnerships with communities and end-users.

# Water Power – FY 2022 Hydro Highlights and Major Changes



- **Increase Funding for Hydro Flexibility & Storage Expansion (\$26M):** Invest in a fleet-wide, but regionally informed, approaches to increasing hydropower flexibility, storage, and community/utility focused assistance. This includes work to support hybrids, pumped storage valuation, among others.
- **Enhancing Understanding of Hydrologic and Climate for Hydropower (\$18M):** Develop a suite of climate and hydrologic models and decision-makings tools to provide accurate state-of-the-art climate information and diagnostic capabilities.
- **Investing to Modernize the Existing Hydro Fleet (\$8M):** Build upon foundational work to establish the foundation for digital twin applications of hydropower, and cybersecurity planning, and environmental technology development like fish passage for relicensing and new builds
- **Expanding Hydro by Powering Nonpowered Dams and Infrastructure (\$26M):** Increase in funding would support advanced manufacturing, advance technology demonstrations of powering nonpowered dams, expanded efforts into demonstration hydro's potential in partnership with USDA for irrigation modernization, as well as investment in novel water infrastructure sensing capabilities in coordination with AMO.
- **STEM/Workforce (\$1.1M):** Expand efforts to attract, retain, and retrain talent for the hydropower sector.



- **Energy Transitions Initiative Partnership Project Expansion (Crosscutting Hydro/Marine) (\$10M):** Expand ETIPP to support more communities, expand community-based organizations support, and fund to support demonstrations based on the plans developed through ETIPP.
- **Demonstration and In-Water Deployment of Marine Energy Systems (\$45M):** Expand on the Powering the Blue Economy (PBE) initiative, to demonstrate PBE applications like desalination systems for remote communities and disaster relief and recovery, marine energy powered ocean observing systems, and design and systems based on outcomes of first cohort of ETIPP. And support the fabrication and demonstration of potential grid-connected devices at the PacWave facility.
- **Foundational R&D, Resource Assessment, Alternative Markets, and Prototyping for Marine (\$29M):** Invest in controls, advanced materials, university early-stage R&D, expanded assessments of ocean energy, and increased SBIR investments. Expand foundational work assessing feasibility of other PBE markets like aquaculture or thermal gradients to support R&D and demo growth.
- **Testing and Infrastructure for Marine (\$18M):** Maintain funding for the TEAMER program, which provides access to free testing for developers and researchers, investments in infrastructure upgrades, and funding for the PacWave facility. Invest in infrastructure at labs and universities.
- **STEM/Workforce (\$2.1M):** Build on successful Marine Energy Collegiate Competition, and support fellowships and other STEM-focused activities to build a robust marine energy workforce.

# Geothermal Technologies – FY 2022 Request



Geothermal Technologies researches, develops, and validates innovative and cost-competitive technologies and tools to locate, access, and develop geothermal resources in the United States, enabling the deployment of carbon-free, flexible geothermal energy in both the electric and non-electric sectors.

Subprogram (dollars in thousands)	FY 2021 Enacted	FY 2022 Request	FY 2022 vs. FY 2021	% Change
Enhanced Geothermal Systems	65,000	70,380	+5,380	+8%
Hydrothermal Resources (formerly Hydrothermal)	20,000	39,100	+19,100	+96%
Low Temperature and Coproduced Resources	15,000	34,700	+19,700	+131%
Data, Modeling, and Analysis (formerly Systems Analysis)	6,000	19,580	+13,580	+226%
<b>Total</b>	<b>106,000</b>	<b>163,760</b>	<b>+57,760</b>	<b>+54%</b>

## FY 2022 Emphasis Areas

- The Geothermal Technologies Office (GTO) will support R&D for technologies to help the U.S. achieve a **carbon pollution-free electricity sector no later than 2035** through investments in the Frontier Observatory for Research in Geothermal Energy (FORGE), a drilling technology demonstration campaign, EGS near-field demonstrations, a new initiative aimed at transitioning oil and gas technologies and talent to geothermal energy, and grid policy and regulatory support.
- GTO will also emphasize the Administration’s goal to **reduce the carbon footprint of the U.S. building stock by 80% by 2035** through programs designed to deploy geothermal heating/cooling at Federal Installations (in partnership with FEMP), provide technical assistance for communities installing geothermal heating and cooling, and collaborate with BTO to demonstrate the market viability of geothermal in highly energy-efficient, demand-flexible, low-carbon buildings.
- GTO’s programs focus on **accruing benefits to disadvantaged communities** – Geothermal’s high-capacity factor, small physical footprint, and wide-ranging applications ensure that it can be utilized in urban centers, rural areas, and remote communities where geothermal has high technical and economic potential.



**Frontier Observatory in Research in Geothermal Energy (FORGE) (\$20M):** Utah FORGE drilled the first-ever highly deviated geothermal well at a rate twice the industry standard. In FY 2022, GTO will support the next R&D solicitation, contributing to meeting Administration goals for a carbon-free electric grid.

**Drilling Technology Demonstration Campaign (\$20M):** This campaign will enable field demonstration to prove utility and efficacy to industry and attract future private investment and use to further the Nation's goal to a 100 percent clean energy economy.

**Community Geothermal Heating & Cooling Technical Assistance & Deployment (\$15M):** This initiative funds technical assistance to demonstrate, deploy, and implement community-scale direct use geothermal district energy systems through installation of geothermal heat pumps (GHP) and/or direct use of geothermal fluids.

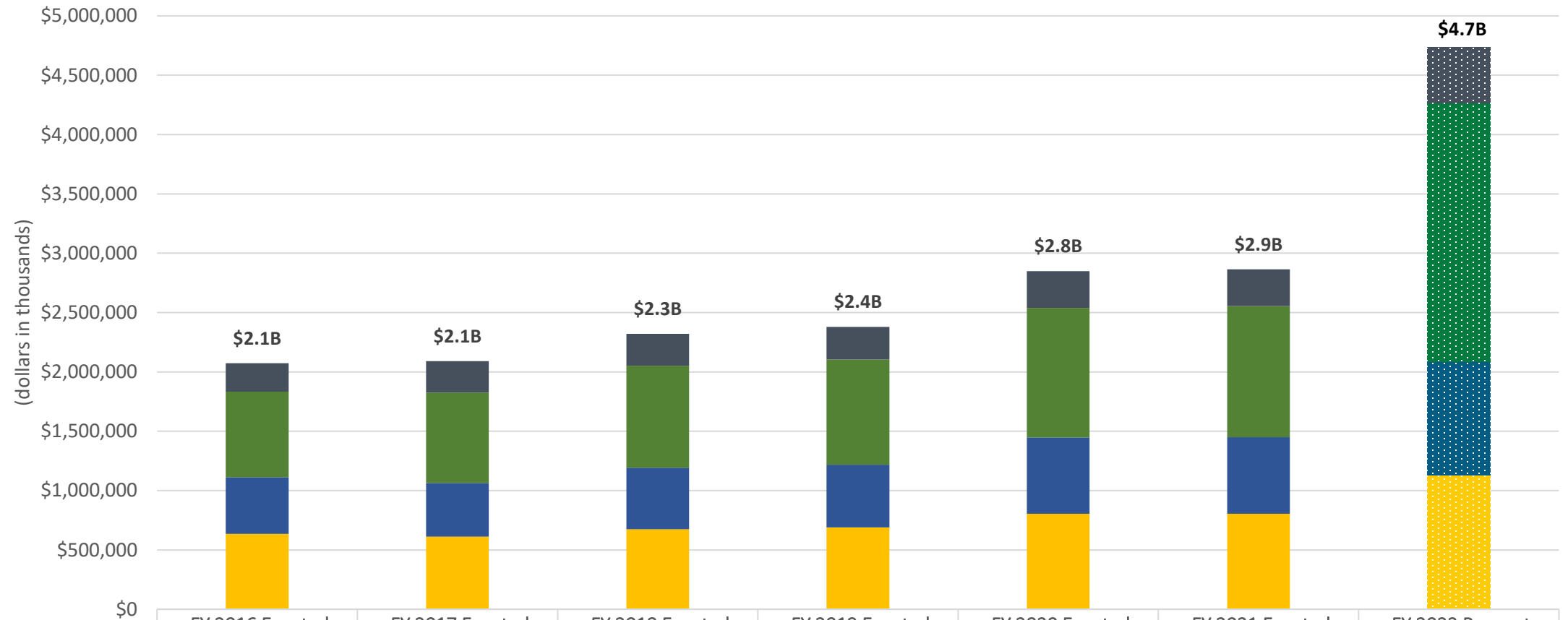
**Geothermal Energy from Oil and gas Demonstrated Engineering (GEODE) (\$10M):** This is a new consortium designed to leverage the oil & gas subsurface industry to help solve geothermal energy's toughest challenges.

**Federal Partnerships for Geothermal Installations (\$5.4M):** GTO and FEMP will make it possible for Federal agencies (DOD, GSA, State, NASA, DOE Labs, Park Service) to consider geothermal energy to heat/cool (and in some limited cases, potentially power) their installations.

**Next Generation Connected Communities (\$5M):** GTO will collaborate with the Building Technologies Office to demonstrate the market viability of highly energy-efficient, demand-flexible, low-carbon buildings integrated with distributed energy resources (DERs) and related infrastructure to reliably and cost-effectively contribute to America's transition to a zero-carbon grid.

# 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 rescissions of prior year balances.*

# Budget Summary

EERE Programs	FY 2020 Enacted (\$K)	FY 2021 Enacted (\$K)	FY 2022 Request (\$K)
<b>Sustainable Transportation</b>	<b>805,500</b>	<b>805,000</b>	<b>1,132,500</b>
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
<b>Renewable Power</b>	<b>642,000</b>	<b>646,000</b>	<b>951,765</b>
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
<b>Energy Efficiency</b>	<b>1,091,000</b>	<b>1,103,500</b>	<b>2,179,150</b>
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
<b>Corporate Support</b>	<b>309,500</b>	<b>309,500</b>	<b>468,585</b>
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
<b>Subtotal, EERE</b>	<b>2,848,000</b>	<b>2,864,000</b>	<b>4,732,000</b>
Rescission of Prior Year Balances*	(58,000)	(2,240)	
Energy Program Rescission*	(12,723)		
<b>Total, EERE</b>	<b>2,777,277</b>	<b>2,861,760</b>	<b>4,732,000</b>

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