

amount of funding recommended. Within funds available for Pensions and Community and Regulatory Support, the Committee recommends an additional \$10,000,000 above the budget request to ensure contractor pensions are adequately funded.

SCIENCE

Appropriations, 2020 .....	\$7,000,000,000
Budget estimate, 2021 .....	5,837,806,000
Committee recommendation .....	7,026,000,000

The Committee recommends \$7,026,000,000 for Science, an increase of \$1,188,194,000 above the budget request. The recommendation includes \$188,000,000 for program direction.

*Distinguished Scientist Program.*—The Committee recommends \$4,000,000 to support the Department’s Distinguished Scientist Program, as authorized in section 5011 of Public Law 110–69, to promote scientific and academic excellence through collaborations between institutions of higher education and national laboratories to be funded from across all Office of Science programs.

*Quantum Information Science.*—The Committee supports the Office of Science’s coordinated and focused research program in quantum information science to support the Department’s science, energy, and national security missions, as authorized in sections 401 and 402 of Public Law 115–368, the National Quantum Initiative. This Industry of the Future promises to yield revolutionary new approaches to computing, sensing, communication, data security, and metrology, as well as our understanding of the universe, and accordingly, the Committee recommends \$270,541,000 from across the Office of Science programs to advance early-stage fundamental research in this field of science, including activities authorized in section 401 and the continuation of up to five National Quantum Information Science Research Centers authorized in section 402. To the greatest extent practical, this effort shall be undertaken in coordination with the National Science Foundation and the National Institute of Standards and Technology. Further, the Department is directed to collaborate with private sector stakeholders, the user community and interagency partners, to develop a roadmap to provide researchers access to quantum systems so as to enhance the U.S. quantum research enterprise, stimulate the fledgling U.S. quantum computing industry, educate the future quantum computing workforce, and accelerate advancement of quantum computer capabilities. The Department is directed to brief the Committee within 90 days of the enactment of this act on such a roadmap.

*Artificial Intelligence and Machine Learning.*—The Committee recommends not less than \$120,000,000 for Artificial Intelligence and Machine Learning across the Office of Science Programs. As the stewards of the leadership computing facilities, the Committee expects Advanced Scientific Computing Research to take a lead role in the Department’s artificial intelligence and machine learning activities. The Committee appreciates the Department’s focus on the development of foundational artificial intelligence and machine learning capabilities, and directs the Office of Science to apply those capabilities to the Office of Science’s mission with a focus on

accelerating scientific discovery in its Scientific User Facilities and large experiments.

*Office of Science Carbon Dioxide Removal.*—The Committee recommends not less than \$20,000,000 in Basic Energy Sciences and Biological and Environmental Research for research and development of negative emissions technologies, including not less than \$5,000,000 for direct air capture. The Office of Science is directed to continue to collaborate with the Office of Fossil Energy and the Office of Energy Efficiency and Renewable Energy to support research, development, and demonstration projects to advance the development and commercialization of carbon removal technologies on a significant scale.

*Collaborative Research.*—Collaborative research efforts between the Department and the National Institutes of Health [NIH] are developing breakthroughs in health research, including drug discovery, brain research, diagnostic technologies, imaging, and other biomedical research areas. The Department is encouraged to expand its relationships with NIH in order to work together more strategically to leverage the Department's Scientific User Facilities and research capabilities, including instrumentation, materials, modeling and simulation, and data science.

#### ADVANCED SCIENTIFIC COMPUTING RESEARCH

The Committee recommends \$1,029,000,000 for Advanced Scientific Computing Research [ASCR].

The Committee strongly supports ASCR's leadership in emerging areas relevant to the Department's mission, including artificial intelligence and quantum information science. The Committee commends ASCR's pursuit of machine learning tools for scientific applications and its support for the development of algorithms for future deployable quantum computers. The Committee recognizes that a robust research program in applied and computational mathematics and computer science will be critical to continued progress in these areas and is supportive of the Department's efforts to prioritize these programs.

The Committee recommends \$168,945,000 for the Exascale Computing Project. In addition, the Committee recommends \$230,000,000 for the Oak Ridge Leadership Computing Facility, \$155,000,000 for the Argonne Leadership Computing Facility, \$110,000,000 for the National Energy Research Scientific Computing Center, and \$90,000,000 for ESnet.

Maintaining international leadership in high performance computing requires a long term and sustained commitment to basic research in computing and computational sciences, including applied math, software development, networking science, and computing competency among scientific fields. The Committee recommends \$254,977,000 for Mathematical, Computational, and Computer Sciences Research. Further, the Committee recommends not less than \$10,000,000 for the Computational Sciences Graduate Fellowship.

#### BASIC ENERGY SCIENCES

The Committee recommends \$2,215,000,000 for Basic Energy Sciences [BES].

The Committee continues to support the EPSCoR program and its goals of broadening participation in sustainable and competitive basic energy research in eligible jurisdictions. The Committee recommends \$25,000,000 for EPSCoR and directs the Department to continue annual or at minimum, biennial implementation grant solicitations.

The Committee recommends \$525,000,000 to provide for operations at the five BES light sources and \$292,000,000 for the high-flux neutron sources. The Committee recommends not less than \$115,000,000 for the Energy Frontier Research Centers to continue multi-disciplinary, fundamental research needed to address scientific grand challenges. The Committee recommends not less than \$139,000,000 for operations at the five BES Nanoscale Science Research Centers and to adequately invest in the recapitalization of key instruments and infrastructure, and in staff and other resources necessary to deliver critical scientific capabilities to users. The Committee recognizes that leveraging advances in artificial intelligence for chemistry and materials science presents a unique opportunity to accelerate discovery and innovation. The Department is encouraged to explore opportunities to develop an autonomous chemistry and materials synthesis platform as part of the Nanoscale Science Research Centers. The capabilities will leverage advances in artificial intelligence to enable greater efficiencies and scientific throughput, leading to significant reduction of the total time and cost in novel materials discovery and innovation.

The Committee recommends \$24,088,000 for the Batteries and Energy Storage Hub, the Joint Center for Energy Storage Research [JCESR], and \$20,000,000 for the Fuels from Sunlight Hub.

The Committee encourages the Department to continue funding to support research and development needs of graduate and post-graduate science programs at Historically Black Colleges and Universities.

The Committee recommends \$26,000,000 for exascale systems.

Not less than \$19,000,000 is recommended for Other Project Costs, of which \$2,000,000 is for the High Energy Upgrade at LCLS-II; \$13,000,000 is for the Second Target Station; \$3,000,000 is for the Proton Power Upgrade project at the Spallation Neutron Source; and \$1,000,000 is for the Cryomodule Repair and Maintenance Facility. The Committee recommends \$5,000,000 for the NSRC Recapitalization Project. Further, the Committee recommends not less than \$5,500,000 for the NSLS II Experimental Tools II Major Item of Equipment [MIE]. The Department is directed to continue supporting the construction of additional beamlines in future budget requests so the Nation's scientists can more fully leverage the investment that has been made in the NSLS II while it is the most powerful X-Ray light source in the nation.

#### BIOLOGICAL AND ENVIRONMENTAL RESEARCH

The Committee recommends \$750,000,000 for Biological and Environmental Research.

The Department is directed to give priority to optimizing the operation of Biological and Environmental Research User Facilities.

The Committee directs the Department to enhance investments in machine learning to advance the use of diverse and increasingly autonomous datasets to understand environmental and climate dynamics; rapidly incorporate datasets into predictive watershed, ecosystem and climate models; and project the onset of and track extreme events, such as atmospheric rivers and hurricanes.

The Committee recommends not less than \$100,000,000 for the four Bioenergy Research Centers. The Committee directs the Department to maintain Genomic Science as a top priority and recommends not less than \$109,000,000 for Foundational Genomics Research. Further, the Committee recommends not less than \$45,000,000 for Biomolecular Characterization and Imaging Science, including \$15,000,000 to continue the development of a multi-scale genes-to ecosystems approach that supports a predictive understanding of gene functions and how they scale with complex biological and environmental systems. The Committee recommends \$85,000,000 for the Joint Genome Institute, an essential component for genomic research. The Committee supports the Department's establishment of a national microbiome database collaborative.

The Committee recommends not less than \$78,000,000 for Environmental System Science. Within available funds for Earth and Environmental Systems Sciences, the Committee recommends not less than \$10,000,000 is for Next Generation Ecosystem Experiments Arctic; \$8,300,000 is for the Spruce and Peatland Responses Under Changing Environments field site; \$5,000,000 is to initiate planning and pilot studies for new Terrestrial Ecosystem Science manipulation experiments; \$7,000,000 for Next Generation Ecosystem Experiments Tropics; and \$5,100,000 for AmeriFLUX Long-Term Earth System Observations. Further, within available funding the Committee recommends not less than \$3,500,000 to support ongoing research and discovery related to mercury biogeochemical transformations in the environment and \$6,800,000 for Watershed Function Science Focus Area.

The Committee supports the Department's efforts to advance understanding of coastal ecosystems, as initiated with the terrestrial-aquatic interfaces pilot in fiscal year 2019, and recommends \$30,000,000 to build upon the current modeling-focused effort and to develop observational assets and associated research to study the nation's major land-water interfaces, including the Great Lakes, by leveraging national laboratories' assets as well as local infrastructure and expertise at universities and other research institutions. The Committee encourages the Department to continue to support the River Corridor Science Focus Area.

Due to the importance of snowmelt-dominated mountainous systems to Western U.S. water resources, the Committee encourages the Department to develop an integrated mountainous hydrology focus, which extends observations and models and leverages collaborations supported by other Federal agencies.

The Committee recommends up to \$6,000,000 to advance biological and environmental capabilities through the development and prototyping of fabricated ecosystems and sensors that enable interrogation of biological-environmental interactions across molecular to ecosystem-relevant scales under controlled laboratory conditions.

The Committee recommends \$15,000,000 to support the exascale computing initiative. The Committee encourages the Department to enhance investments in machine learning as needed to improve prediction of watershed and ecosystem dynamics using diverse and distributed databases.

The Committee encourages the Department to increase its funding for academia to perform independent evaluations of climate models using existing data sets and peer-reviewed publications of climate-scale processes to determine various models' ability to reproduce the actual climate.

The Committee is aware that reducing uncertainty in understanding cloud aerosol effects requires investment in observational studies, modeling, and computing. The Committee recommends \$15,000,000 for cloud-aerosol research and computing.

#### FUSION ENERGY SCIENCES

The Committee recommends \$640,000,000 for Fusion Energy Sciences.

*U.S. Contribution to the International Thermonuclear Experimental Reactor [ITER] Project.*—The Committee recommends \$211,000,000 for the U.S. contribution to the ITER Project, of which not less than \$54,000,000 is for in-cash contributions.

*Operations, Research, and Development.*—The Department is encouraged to support optimal facility operations levels for DIII-D. The Committee recommends \$25,000,000 for the Material Plasma Exposure eXperiment.

The Committee is aware of the increase in global investment in private fusion energy companies developing advanced technology approaches with a focus on commercialization. The U.S. has an opportunity to seize global leadership in this transformational energy sector and attract global industry stakeholders by building on the Department's laboratory capabilities and world class fusion science talent while partnering with these private fusion companies. The Committee supports the Department's Innovation Network for Fusion Energy [INFUSE] research and development program that is advancing enabling fusion energy commercialization technologies through partnerships with industry, labs and universities, and recommends \$4,000,000 for the continuation of the INFUSE program.

Further, the Committee previously directed the Fusion Energy Sciences Advisory Committee to give full consideration to the establishment of a cost-share program for reactor technologies as part of the ongoing long-range strategic planning activity. The Committee looks forward to receipt of the long-range strategic plan from the Fusion Energy Sciences Advisory Committee.

The Committee recommends not less than \$20,000,000 for the High-Energy-Density Laboratory Plasmas program to support initiatives in quantum information science, advance cutting-edge research in extreme states of matter, expand the capabilities of the LaserNetUS facilities, and provide initial investments in new intense, ultrafast laser technologies needed to retain U.S. leadership in these fields. To maintain U.S. leadership in intense, ultrafast lasers, the Committee directs the Department, within 180 days of enactment of this act, to submit a report to the Committees on Appropriations of Houses of Congress, describing the Department's plans

to respond to the recommendations of the Brightest Light Initiative Workshop Report, including facility investments and improvements needed to advance laser science technology and applications.

#### HIGH ENERGY PHYSICS

The Committee recommends \$1,050,000,000 for High Energy Physics.

Within Major Items of Equipment [MIE], and Other Project Costs, the Committee recommends \$30,000,000 for the Sanford Underground Research Facility; \$99,000,000 for the HL-LHC Upgrade projects; \$16,000,000 for the Facility for Advanced Accelerator Experimental Tests-II; and \$2,000,000 for the Cosmic Microwave Background-Stage 4 MIE; \$12,000,000 for the Dark Energy Spectroscopy Instrument; and \$6,000,000 for Lux Zeplin.

The Committee recommends not less than \$18,500,000 for Vera C. Rubin Observatory operations. The Committee acknowledges the longstanding planning and contributions of resources by partner organizations with respect to data management on the Vera C. Rubin Observatory. The Committee directs the Department to employ the computational expertise and existing capabilities in data management of those organizations-potentially in partnership with the national laboratories-to ensure the successful operation of this project and access for the broad research community. The Department is directed to provide a briefing to the Committee on the status of the project, including plans for management of the data facility, within 30 days of enactment of this act.

#### NUCLEAR PHYSICS

The Committee recommends \$725,000,000 for Nuclear Physics.

The Committee recommends optimal operations for all Nuclear Physics user facilities.

Within Major Items of Equipment and Other Project Costs, the Committee recommends \$6,600,000 for the Gamma-Ray Energy Tracking Array; \$5,530,000 for sPHENIX; \$5,000,000 for MOLLER; \$1,400,000 for Ton-Scale Neutrino-less Double Beta Decay; \$17,000,000 for the Electron Ion Collider; and \$1,000,000 for the High Rigidity Spectrometer; and \$3,000,000 for the U.S. Stable Isotope Production and Research Center.

Within available funds, not less than \$1,000,000 is recommended to establish a traineeship program for students to develop the future workforce of radioisotope production. Further, the Department is directed to provide, within 180 days of enactment of this act, a plan to develop a consortium of research universities to apply advanced manufacturing techniques to radioisotope production, including automation, digitalization, artificial intelligence, fabrication, and state-of-the-art characterization instrumentation.

#### WORKFORCE DEVELOPMENT FOR TEACHERS AND SCIENTISTS

The Committee recommends \$28,500,000 for Workforce Development for Teachers and Scientists. Within available funds, the Committee recommends \$13,600,000 for Science Undergraduate Laboratory Internships; \$1,700,000 for Community College Internships; \$4,500,000 for the Graduate Student Research Program; \$1,800,000

for the Visiting Faculty Program; \$1,200,000 for the Albert Einstein Distinguished Educator Fellowship; \$2,900,000 for the National Science Bowl; \$700,000 for Technology Development and Online Application; \$600,000 for Evaluation Studies; and \$1,500,000 for Outreach.

Within Outreach, the Committee directs the Department to establish a working group comprised of the Office of Science and national laboratories and a consortium of universities to assist universities in the development of a curriculum to promote the next generation of scientists utilizing artificial intelligence, quantum information science, and machine learning. The Committee directs the Department to provide a report and briefing to the Committee within 180 days of enactment of this act on a plan to meet universities educational curriculum needs to support this future scientific workforce.

Further, the Department was previously directed in the Energy and Water Development and Related Agencies Appropriations Act (Public Law 116-94), 2020, to provide a report to the Committees on Appropriations of both Houses of Congress on the how the Office of Science plans to comply with Executive Order 13853 to develop a pipeline to meet future needs in trade craft requirements and workforce development in coordination with the national laboratories not later than 60 days after enactment. The Committee has not received the report and looks forward to receiving it expeditiously.

SCIENCE LABORATORIES INFRASTRUCTURE

The Committee recommends \$279,500,000 for Science Laboratories Infrastructure.

Within these funds, the Committee recommends \$26,000,000 for nuclear operations at Oak Ridge National Laboratory. In future budget requests, the Committee directs the Office of Science to work with the Office of Nuclear Energy to demonstrate a commitment to operations and maintenance of nuclear facilities at Oak Ridge National Laboratory that supports multiple critical missions.

ADVANCED RESEARCH PROJECTS AGENCY–ENERGY

Appropriations, 2020 .....	\$425,000,000
Budget estimate, 2021 .....	– 310,744,000
Committee recommendation .....	430,000,000

The Committee recommends \$430,000,000 for the Advanced Research Projects Agency-Energy [ARPA–E], an increase of \$740,744,000 above the budget request. Within available funds, the Committee recommends \$35,000,000 for program direction.

The Committee continues to definitively reject the short-sighted proposal to terminate ARPA–E, and instead increases investment in this transformational program and directs the Department to continue to spend funds provided on research and development and program direction. The Department shall not use any appropriated funds to plan, develop, implement, or pursue the termination of ARPA–E. Further, the Department is directed to disburse funds appropriated for ARPA–E on eligible projects within a reasonable time period, consistent with past practices.

	200				- 200
Community and Regulatory Support .....					
TOTAL, NON-DEFENSE ENVIRONMENTAL CLEANUP .....	319,200	275,820	326,000	+ 6,800	+ 50,180
URANIUM ENRICHMENT DECONTAMINATION AND DECOMMISSIONING FUND					
Oak Ridge .....	195,693	144,701	134,701	- 60,992	- 10,000
Nuclear Facility D&D, Paducah .....	240,000	206,518	240,000		+ 33,482
Portsmouth:					
Nuclear Facility D&D, Portsmouth .....	367,193	351,854	367,193		+ 15,339
Construction:					
15-U-408 On-site Waste Disposal Facility, Portsmouth .....	41,102	46,639	46,639	+ 5,537	
20-U-401 On-site Waste Disposal Facility (Cell Line 2&3) .....	10,000	16,500	16,500	+ 6,500	
Subtotal, Portsmouth .....	418,295	414,993	430,332	+ 12,037	+ 15,339
Pension and Community and Regulatory Support .....	21,762	18,748	32,967	+ 11,205	+ 14,219
Title X Uranium/Thorium Reimbursement Program .....	5,250	21,284	10,000	+ 4,750	- 11,284
TOTAL, UED&D FUND .....	881,000	806,244	848,000	- 33,000	+ 41,756
SCIENCE					
Advanced Scientific Computing Research:					
Research .....	791,265	819,106	860,055	+ 68,790	+ 40,949
Construction:					
17-SC-20 Office of Science Exascale Computing Project (SC-ECP) .....	188,735	168,945	168,945	- 19,790	
Subtotal, Advanced Scientific Computing Research .....	980,000	988,051	1,029,000	+ 49,000	+ 40,949
Basic Energy Sciences:					
Research .....	1,853,000	1,751,673	1,859,000	+ 6,000	+ 107,327
Construction:					
18-SC-10 Advanced Photon Source Upgrade (APS-U), ANL .....	170,000	150,000	160,000	- 10,000	+ 10,000
18-SC-11 Spallation Neutron Source Proton Power Upgrade (PPU), ORNL .....	60,000	5,000	52,000	- 8,000	+ 47,000
18-SC-12 Advanced Light Source Upgrade (ALS-U), LBNL .....	60,000	13,000	62,000	+ 2,000	+ 49,000
18-SC-13 Linac Coherent Light Source-II-High Energy (LCLS-II-HE), SLAC .....	50,000	14,000	52,000	+ 2,000	+ 38,000
19-SC-14 Second Target Station (STS), ORNL .....	20,000	1,000	29,000	+ 9,000	+ 28,000
21-SC-10 Cryomodule Repair and Maintenance Facility (CRMF), SLAC .....		1,000	1,000	+ 1,000	



DEPARTMENT OF ENERGY—Continued  
[In thousands of dollars]

	2020 appropriations	Budget estimate	Committee recommendation	Committee recommendation compared to—	
				2020 appropriations	Budget estimate
Subtotal, Construction .....	360,000	184,000	356,000	-4,000	+172,000
Subtotal, Basic Energy Sciences .....	2,213,000	1,935,673	2,215,000	+2,000	+279,327
Biological and Environmental Research .....	750,000	516,934	750,000	.....	+233,066
Fusion Energy Sciences .....	414,000	313,151	411,500	-2,500	+98,349
Construction: .....	242,000	107,000	211,000	-31,000	+104,000
14-SC-60 US Contributions to ITER (US ITER) .....	15,000	5,000	17,500	+2,500	+12,500
20-SC-61 Matter in Extreme Conditions (MEC) Petawatt Upgrade, SJAC .....	257,000	112,000	228,500	-28,500	+116,500
Subtotal, Construction .....	671,000	425,151	640,000	-31,000	+214,849
Subtotal, Fusion Energy Sciences .....	814,000	697,631	814,000	.....	+116,369
High Energy Physics .....	171,000	100,500	171,000	.....	+70,500
Research .....	60,000	20,000	65,000	+5,000	+45,000
Construction: .....	231,000	120,500	236,000	+5,000	+115,500
11-SC-40 Long Baseline Neutrino Facility / Deep Underground Neutrino Experiment (LBNF/DUNE), FNAL .....	1,045,000	818,131	1,050,000	+5,000	+231,869
18-SC-42 Proton Improvement Plan II (PIP-II), FNAL .....	660,000	635,027	689,700	+29,700	+54,673
Subtotal, Construction .....	40,000	5,300	5,300	-34,700	.....
Subtotal, High Energy Physics .....	12,000	12,000	25,000	+13,000	+13,000
Nuclear Physics: .....	1,000	1,000	5,000	+4,000	+4,000
Research .....					
Construction: .....					
14-SC-50 Facility for Rare Isotope Beams, MSU .....					
20-SC-51 US Stable Isotope Production and Research Center, ORNL .....					
20-SC-52 Electron Ion Collider, BNL .....					

Subtotal, Construction .....	53,000	18,300	35,300	-17,700	+17,000
Subtotal, Nuclear Physics .....	713,000	653,327	725,000	+12,000	+71,673
Workforce Development for Teachers and Scientists .....	28,000	20,500	28,500	+500	+8,000
Science Laboratories Infrastructure:					
Infrastructure Support:					
Payment in Lieu of Taxes .....	4,540	4,650	4,650	+110	.....
Oak Ridge Landlord .....	5,610	5,860	5,860	+250	.....
Facilities and Infrastructure .....	56,850	6,200	49,100	-7,750	+42,900
Oak Ridge Nuclear Operations .....	26,000	6,000	26,000	.....	+20,000
Subtotal, Infrastructure Support .....	93,000	22,710	85,610	-7,390	+62,900
Construction:					
17-SC-71 Integrated Engineering Research Center, FNAL .....	22,000	12,000	20,500	-1,500	+8,500
18-SC-71 Energy Sciences Capability, PNNL .....	23,000	23,000	23,000	.....	.....
19-SC-71 Science User Support Center, BNL .....	20,000	7,000	20,000	.....	+13,000
19-SC-72 Electrical Capacity and Distribution Capability, ANL .....	30,000	.....	.....	-30,000	.....
19-SC-73 Translational Research Capability, ORNL .....	25,000	10,000	25,000	.....	+15,000
19-SC-74 BioEPIC, LBNL .....	15,000	6,000	15,000	.....	+9,000
20-SC-71 Critical Utilities Rehabilitation Project, BNL .....	20,000	15,000	20,000	.....	+5,000
20-SC-72 Seismic and Safety Modernization, LBNL .....	10,000	10,000	10,000	.....	.....
20-SC-73 CEBAF Renovation and Expansion, JINAF .....	2,000	2,000	2,000	.....	.....
20-SC-74 Craft Resources Support Facility, ORNL .....	15,000	25,000	25,000	+10,000	.....
20-SC-75 Large Scale Collaboration Center, SLAC .....	11,000	8,000	11,240	+240	+3,240
20-SC-76 Tritium System Demolition and Disposal, PPPL .....	13,000	19,400	19,400	+6,400	.....
20-SC-77 Argonne Utilities Upgrade, ANL .....	500	2,000	500	.....	-1,500
20-SC-78 Linear Assets Modernization Project, LBNL .....	500	2,000	500	.....	-1,500
20-SC-79 Critical Utilities Infrastructure Revitalization, SLAC .....	500	2,000	500	.....	-1,500
20-SC-80 Utilities Infrastructure Project, FNAL .....	500	2,000	500	.....	-1,500
21-SC-71 Princeton Plasma Innovation Center, PPPL .....	.....	2,000	250	+250	-1,750
21-SC-72 Critical Infrastructure Recovery & Renewal, PPPL .....	.....	2,000	250	+250	-1,750
21-SC-73 Ames Infrastructure Modernization, Ames .....	.....	2,000	250	+250	-1,750
Subtotal, Construction: .....	208,000	151,400	193,890	-14,110	+42,490
Subtotal, Science Laboratories Infrastructure .....	301,000	174,110	279,500	-21,500	+105,390
Safeguards and security .....	112,700	115,623	121,000	+8,300	+5,377

DEPARTMENT OF ENERGY—Continued  
 [In thousands of dollars]

	2020 appropriations	Budget estimate	Committee recommendation	Committee recommendation compared to—	
				2020 appropriations	Budget estimate
Program Direction .....	186,300	190,306	188,000	+1,700	-2,306
TOTAL, SCIENCE .....	7,000,000	5,837,806	7,026,000	+26,000	+1,188,194
NUCLEAR WASTE DISPOSAL .....	.....	27,500	.....	.....	-27,500
ADVANCED RESEARCH PROJECTS AGENCY—ENERGY .....	.....	.....	.....	.....	.....
ARPA-E Projects .....	390,000	.....	395,000	+5,000	+395,000
Program Direction .....	35,000	21,256	35,000	.....	+13,744
Rescission of Prior Year Balances .....	.....	-332,000	.....	.....	+332,000
TOTAL, ARPA-E .....	425,000	-310,744	430,000	+5,000	+740,744
TITLE 17—INNOVATIVE TECHNOLOGY LOAN GUARANTEE PROGRAM .....	.....	.....	.....	.....	.....
Administrative Expenses .....	32,000	3,000	32,000	.....	+29,000
Offsetting Collection .....	-3,000	-3,000	-3,000	.....	.....
Rescission .....	.....	-160,659	.....	.....	+160,659
Cancellation of Commitment Authority .....	.....	-224,000	.....	.....	+224,000
TOTAL, TITLE 17—INNOVATIVE TECHNOLOGY LOAN .....	.....	.....	.....	.....	.....
GUARANTEE PROGRAM .....	29,000	-384,659	29,000	.....	+413,659
ADVANCED TECHNOLOGY VEHICLES MANUFACTURING LOAN PROGRAM .....	.....	.....	.....	.....	.....
Administrative Expenses .....	5,000	.....	5,000	.....	+5,000
TOTAL, ADVANCED TECHNOLOGY VEHICLES .....	.....	.....	.....	.....	.....
MANUFACTURING LOAN PROGRAM .....	5,000	.....	5,000	.....	+5,000