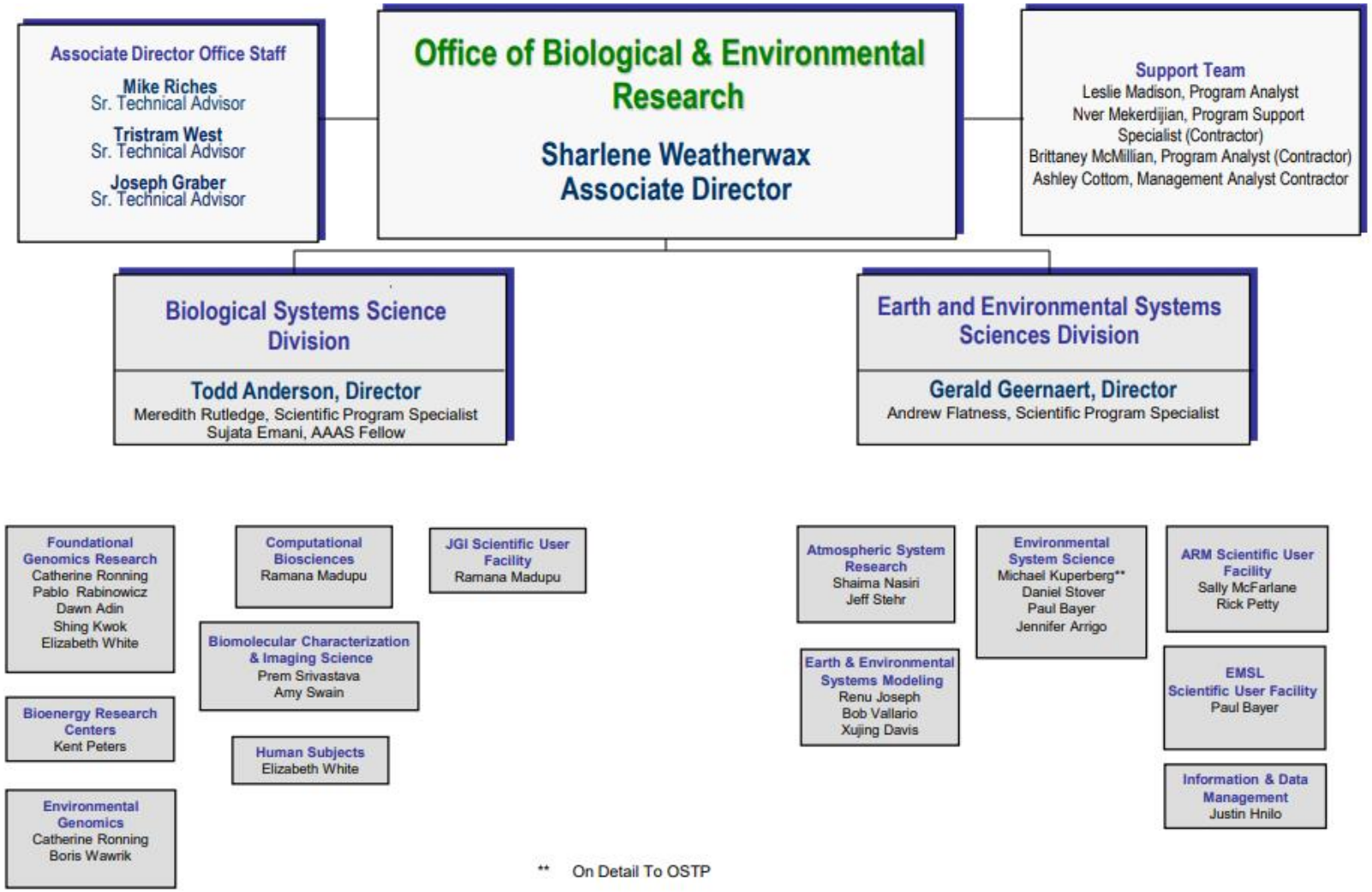
U.S. DEPARTMENT OF ENERGY | Office of Science

Biological and Environmental Research

BER Advisory Committee (BERAC)
Spring Meeting
April 16, 2020

Sharlene Weatherwax
Associate Director

BER Organization Chart



BER Staff Changes

Dr. Jennifer Arrigo

Subsurface and Watershed Science

Dr. Joe Graber

Senior Technical Advisor

Dr. Xujing Davis

Earth System Modeling

Ms. Ashley Cottom

Management Analyst

Dr. Jeff Stehr

Atmospheric Systems Research

BERAC membership

Completed Membership

Dr. L. Ruby Leung

Pacific Northwest National Laboratory

Dr. Jim Hack

Oak Ridge National Laboratory

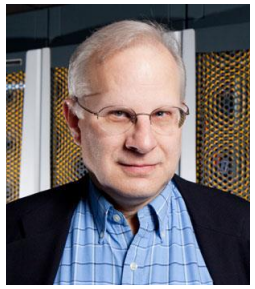
New Membership

Dr. Kate Calvin

Pacific Northwest National Laboratory / JGCRI

BERAC Members Recognized

Maureen C. McCann, *Purdue University*
2019 AAAS Elected Fellow



Leo J. Donner, *NOAA Geophysical Fluid Dynamics Laboratory*
2019 AAAS Elected Fellow

Jerry Meehl, *National Center for Atmospheric Research*
2019 NCAR Distinguished Achievement Award

BER Researchers Recognized

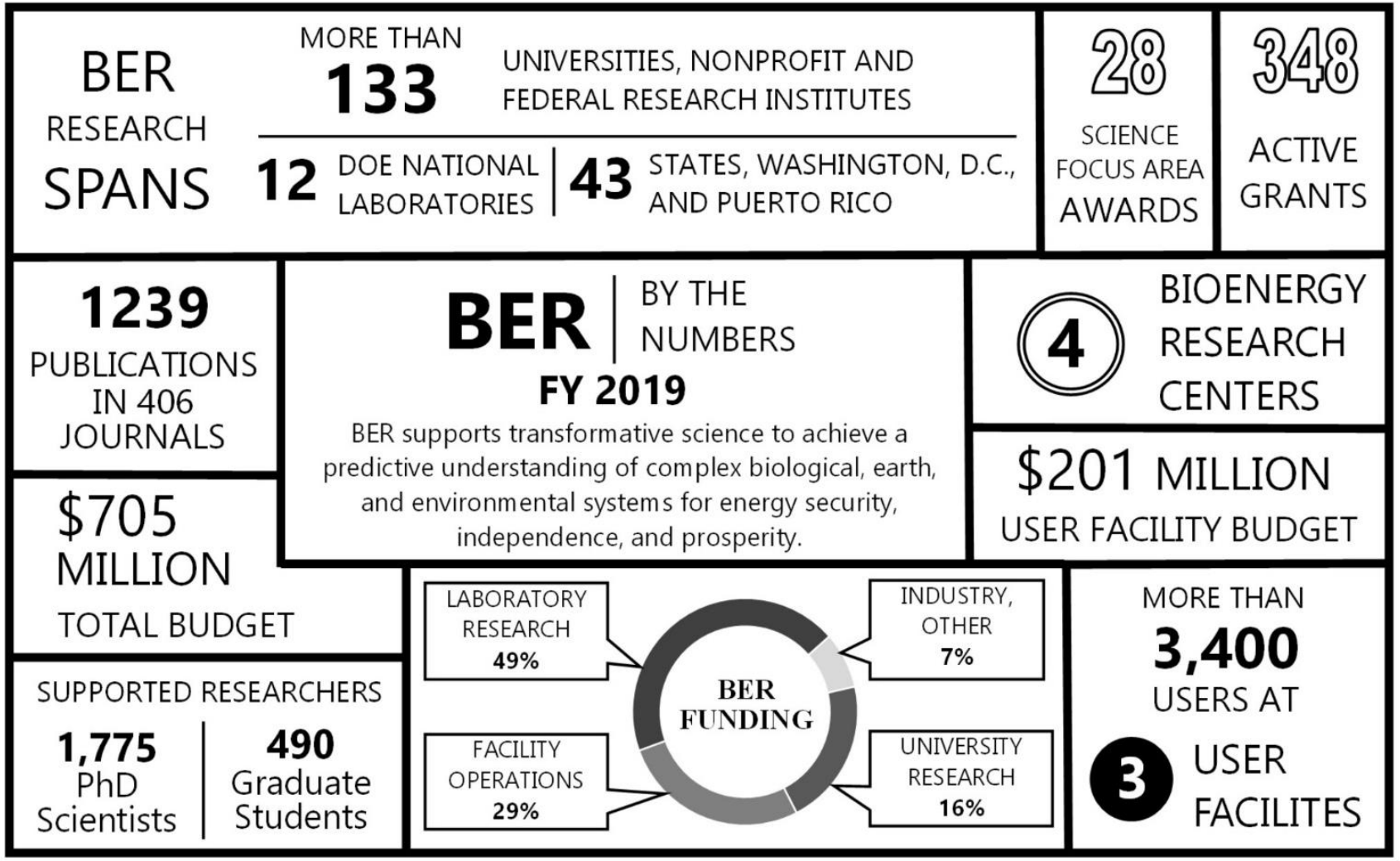
Minghua Zhang, *Stony Brook University*
2019 AAAS Elected Fellow

Michelle O'Malley, *University of California, Santa Barbara*
2020 American Society for Microbiology (ASM) Award for Early Career Applied and Biotechnological Research

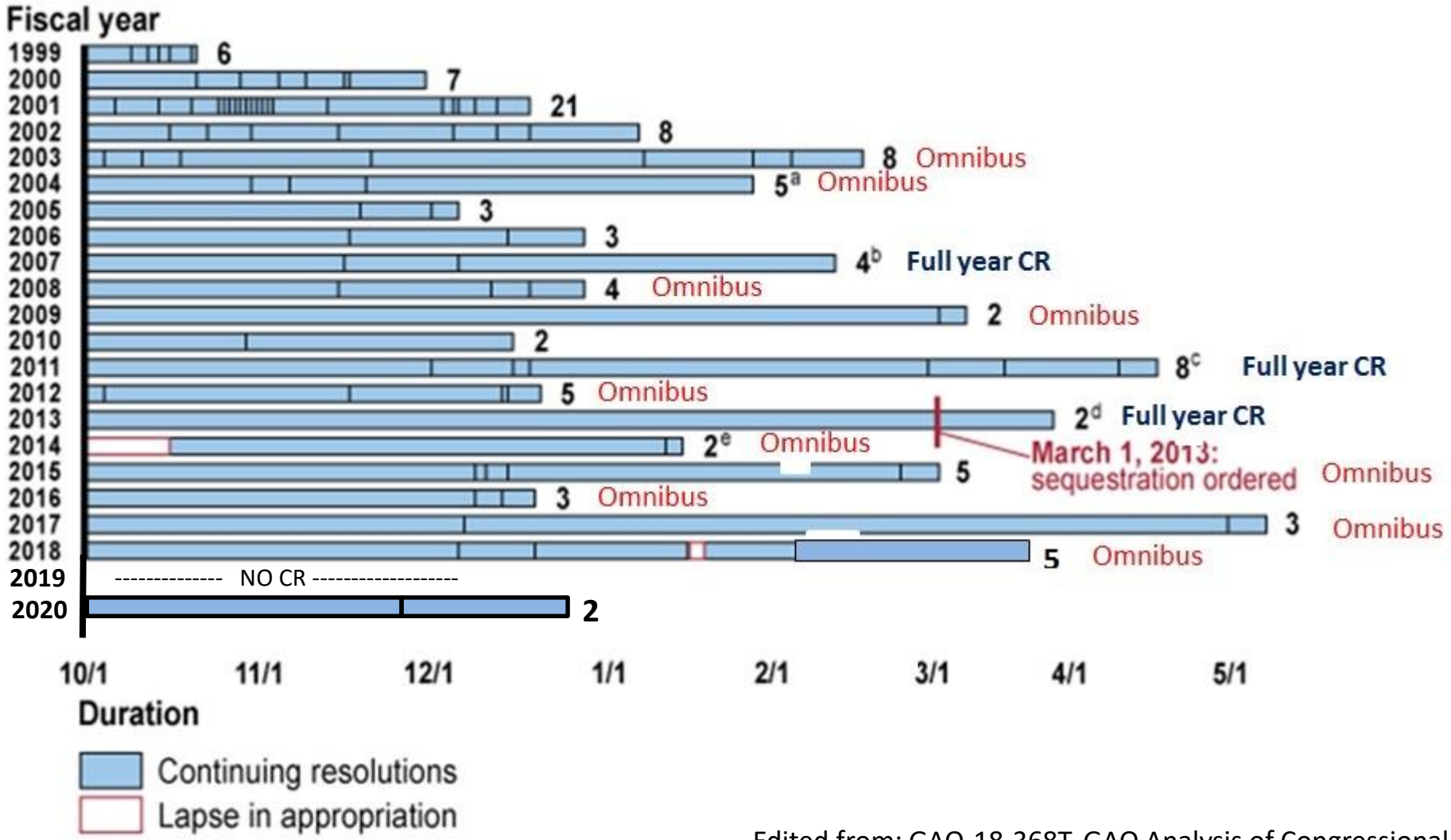
Ben Bond-Lamberty, *Pacific Northwest National Laboratory/JGCRI*
2019 AAAS Elected Fellow

Susan Hubbard, *Lawrence Berkeley National Laboratory*
National Academy of Engineering, Elected Member

BER *By The Numbers* in 2019

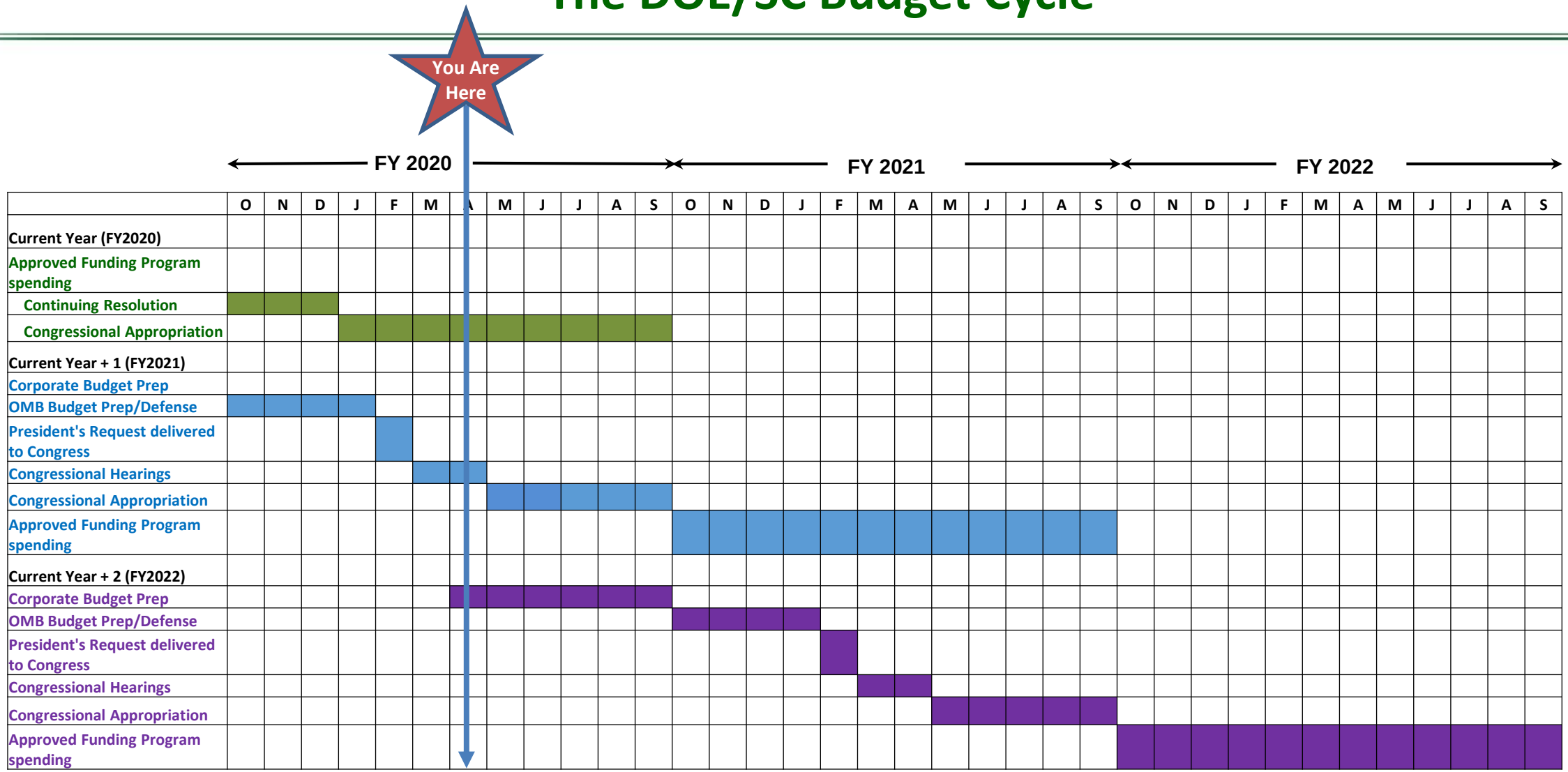


Budget: Duration and Number of Continuing Resolutions



Edited from: GAO-18-368T, GAO Analysis of Congressional Research Service data.

The DOE/SC Budget Cycle



FY 2021 SC President's Budget Request

(Dollars in Thousands)

	FY 2019		FY 2020		FY 2021 President's Request		
	Enacted Approp.	Current Approp.	President's Request	Enacted Approp.	President's Request	President's Request vs. FY 2020 Enacted	
Office of Science							
Advanced Scientific Computing Research	935,500	910,031	920,888	980,000	988,051	8,051	+0.8%
Basic Energy Sciences	2,166,000	2,105,873	1,858,285	2,213,000	1,935,673	-277,327	-12.5%
Biological and Environmental Research	705,000	680,246	494,434	750,000	516,934	-233,066	-31.1%
Fusion Energy Sciences	564,000	549,181	402,750	671,000	425,151	-245,849	-36.6%
High Energy Physics	980,000	955,905	768,038	1,045,000	818,131	-226,869	-21.7%
Nuclear Physics	690,000	669,888	624,854	713,000	653,327	-59,673	-8.4%
Workforce Development for Teachers and Scientists	22,500	22,500	19,500	28,000	20,500	-7,500	-26.8%
Science Laboratories Infrastructure	232,890	232,890	163,600	301,000	174,110	-126,890	-42.2%
Safeguards and Security	106,110	106,110	110,623	112,700	115,623	2,923	+2.6%
Program Direction	183,000	183,000	183,000	186,300	190,306	4,006	+2.2%
SBIR/STTR (SC)		169,376	0	0	0	0	...
Total Budget Authority and Obligations, Office of Science	**6,585,000**	**6,585,000**	**5,545,972**	**7,000,000**	**5,837,806**	**-1,162,194**	**-16.6%**
SBIR/STTR (DOE)	0	123,254	0	0	0	0	...
Total, Office of Science	**6,585,000**	**6,708,254**	**5,545,972**	**7,000,000**	**5,837,806**	**-1,162,194**	**-16.6%**

BER FY 2021 President's Request

(Dollars in thousands)

	FY 2019		FY 2020		FY 2021 President's Request		
	Enacted Approp.	Current Approp.	President's Request	Enacted Approp.	President's Request	President's Request vs. FY 2020 Enacted	
Biological Systems Science							
Genomic Science	249,695	249,695	230,000	268,235	242,135	-26,100	-9.7%
Bioenergy Research Centers (non-add)	*100,000*	*100,000*	*100,000*	*100,000*	*100,000*	*0*	*...*
Biomolecular Characterization and Imaging Science	34,908	34,908	24,908	45,000	24,908	-20,092	-44.6%
Biological Systems Facilities and Infrastructure	70,000	70,000	60,000	77,000	60,000	-17,000	-22.1%
SBIR/STTR	13,194	0	11,892	14,544	12,257	-2,287	-15.7%
Total, Biological Systems Science	**367,797**	**354,603**	**326,800**	**404,779**	**339,300**	**-65,479**	**-16.2%**
Earth and Environmental Systems Sciences							
Atmospheric System Research	28,000	28,103	12,000	35,000	12,000	-23,000	-65.7%
Environmental System Science	62,143	62,627	19,000	77,638	19,000	-58,638	-75.5%
Earth and Environmental Systems Modeling	97,000	96,413	37,643	97,000	37,643	-59,357	-61.2%
Earth and Environmental Systems Sciences Facilities and Infrastructure	138,500	138,500	93,000	123,110	102,635	-20,475	-16.6%
SBIR/STTR	11,560	0	5,991	12,473	6,356	-6,117	-49.0%
Total, Earth and Environmental Systems Sciences	**337,203**	**325,643**	**167,634**	**345,221**	**177,634**	**-167,587**	**-48.5%**
Total, Biological and Environmental Research	**705,000**	**680,246**	**494,434**	**750,000**	**516,934**	**-233,066**	**-31.1%**
Major Item of Equipment (MIE) Recap (Total Estimated Cost [TEC])							
Atmospheric Radiation Measurement (ARM) Aerial Observation Capability (Air-ARM)	17,500	17,500	0	0	0	0	0

BER - FY 2021 Highlights

- **The FY 2021 Request for Biological and Environmental Research will:**
  - Fully support the fourth year of the DOE **Bioenergy Research Centers**
  - Expand **secure biosystems design research** to understand the fundamental genome structure and functional relationships that result in specific, stable and predictable, new, and beneficial traits in model plant and microbial systems
  - Continue bioimaging, measurement and characterization approaches using QIS materials for dynamic in situ sensing
  - Start new efforts in translating biodesign rules to functional properties of novel biological polymers or programmable design of novel biomaterials.
  - Continue core research in **earth and environmental systems science**, with activities focused on scientific analysis and modeling of the sensitivity and uncertainty of Earth system predictions to atmospheric, cryospheric, oceanic, and biogeochemical processes
  - Continue support of the **Energy Exascale Earth System Model**
  - Continue operation of the three BER scientific user facilities: the Joint Genome Institute, the Atmospheric Radiation Measurement Research Facility, and the Environmental Molecular Sciences Laboratory.

Thank you!