

**DOE High Energy Physics (HEP)
Cosmic Frontier (CF)
report to**

**National Academy of Sciences
Committee on “Reviewing the Progress
Toward the Decadal Survey Vision in New
Worlds, New Horizons in Astronomy and
Astrophysics”**

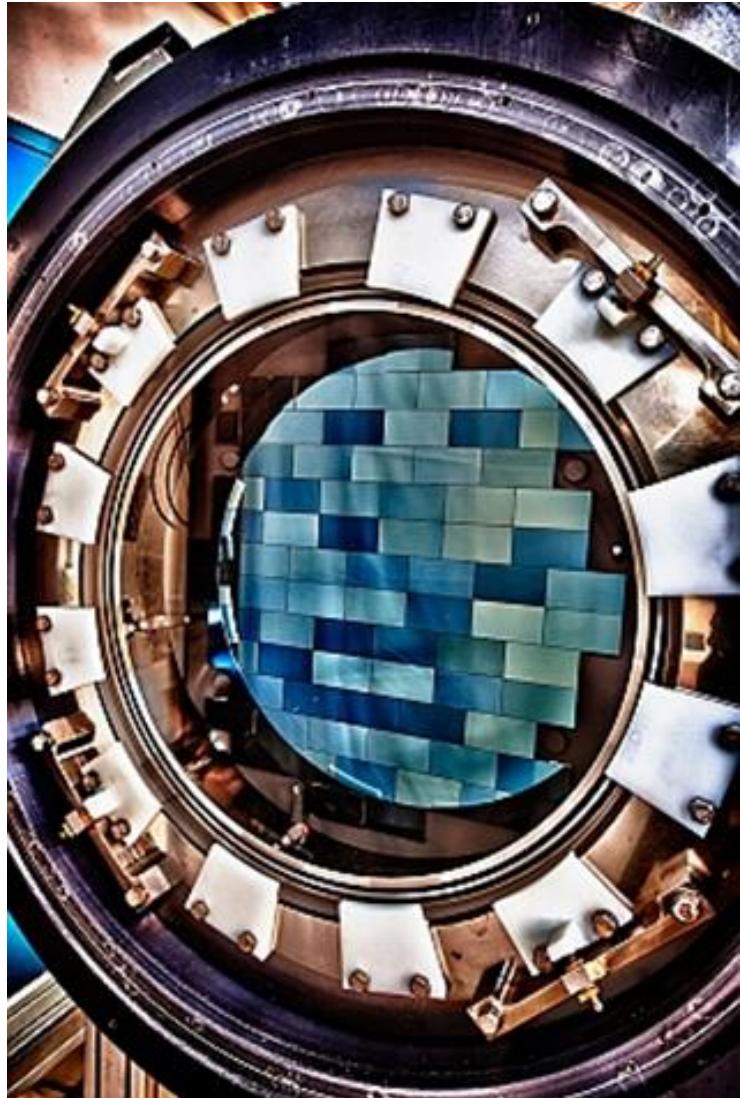
**→updates since the Oct. 2015 report are
shown**

11 January 2016

Kathy Turner

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FY 2014-2016 HEP Program - Budget Status

HEP Budget History (\$K)	FY 2014	FY 2014	FY 2015	FY 2015	FY 2016	FY 2016	FY 2016	FY 2016
	Request	Actual	Request	Enacted	Request	House Mark (~ 5/6/15)	Senate Mark (~ 5/27/15)	Approved (12/16/15)
Energy Frontier	154,687	152,386	153,639	147,584	154,555			
Intensity Frontier	271,043	250,987	251,245	264,224	247,196			
Cosmic Frontier	99,080	96,927	101,245	106,870	119,325			
Theoretical and Computational Advanced Technology	62,870	64,275	58,850	59,274	60,317			
R&D	122,453	150,270	114,242	120,254	115,369			
Accelerator Stewardship	9,931	9,075	19,184	10,000	14,000			
Construction	35,000	51,000	25,000	37,000	56,100			
Total	755,064	774,920	723,405	745,206	766,862			
SBIR/STTR*	21,457	0	20,595	20,794	21,138			
HEP Total	776,521	774,920	744,000	766,000	788,000	776,000	788,100	795,000
Office of Science Total	5,152,700		5,111,155	5,067,738	5,339,800	5,100,000	5,143,900	5,350,200

*FY14 SBIR/STTR was ~ \$21M, so FY2014 actual was ~ \$796M.

FY2016 Budget Notes

At the start of FY16, HEP set up a t plan based on the FY15 budget due to the Continuing Resolution.

- This causes issues in the HEP program since 1) we have many Projects that are ramping up their funding profiles and have to keep them on track and 2) the FY16 request was larger than the FY15 actual budget. For all HEP frontiers, Projects that are baselined (LSST and DESI in Cosmic) are funded at their planned profiles in order to keep them on track; others may have their funding profile adjusted. For Cosmic Frontier, the small project fabrication, R&D and experimental operations support were set at their needed amounts. For all Frontiers, the Research (University grants plus Lab research efforts) budgets were squeezed.

The FY16 budget was approved on 12/16/15.

Cosmic Frontier MIE projects:

- LSST is being funded according to its planned profile.
- DESI is being funded at \$5M more than requested in FY16 (based on budget guidance)
- LZ is being funded at \$1.5M more than requested in FY16 (based on budget guidance)
- SuperCDMS-SNOLAB is being funded at \$1M over the requested amount.

Even though the FY16 approved budget is more than the requested amount, due to the budget guidance we received and other constraints, the research budget is still planned at the Continuing Resolution levels. Each Frontier now has to prepare a request to for the limited additional funds available within the HEP budget.

→ So there is still a possibility of limited additional research funds moving into Cosmic Frontier from the overall HEP funds during FY16.

Cosmic Frontier Budget History – details

Jan. 2016

Cosmic Frontier Budget (\$K)	FY10	FY11	FY12	FY13	FY14	FY15	FY15	FY16	FY16	FY16	FY16	FY16
	Actual	Actual	Actual	Actual	Actual	PRB	Actual	PRB	House	Senate	Cont. Res.	Approved
TOTAL - Cosmic Research	75,315	74,364	69,239	77,922	93,729	93,673	104,367	115,900		111,345	122,570	
Grants	55,487	49,252	47,843	48,652	52,712	45,435	48,779	50,079		46,545	46,545	
National Laboratories	16,482	13,596	12,881	12,233	13,157	11,422	11,773	12,565		11,595	11,595	
Facility Ops & Exp Support	39,005	35,656	34,962	36,419	39,555	34,013	37,006	37,514		34,950	34,950	
Projects	0	7,460	8,505	10,111	10,357	7,238	9,185	7,120		9,190	9,190	
MIE	19,828	17,652	12,891	19,159	30,660	41,000	46,403	58,701		55,610	66,835	
SuperCDMS-Soudan	10,110	5,900	7,000	9,500	22,900	41,000	44,178	57,100		53,375	64,600	
DES												
HAWC												
LSSTcamera												
DESI												
DM-G2												
LZ												
SuperCDMS-SNOLAB												
Small Project Fab + Future R&D	9,718	11,752	5,891									
LSSTcamera	3,000	2,100										
JDEM, DE future	6,000	3,550	2,000									
Dark Matter G1	418	3,682	2,184									
Dark Matter G2	300	1,600	1,000									
SPTpol		250	429									
General		70	278									
HAWC		500										
Small Project Fab												
ADMX-G2							1,025	1,601		2,035	2,035	
SPT-3G							925			935	935	
Future R&D							100			1,100	1,100	
DESI (BigBOSS)				2,000	1,100					200	200	
Dark Matter G1				2,200								
Dark Matter G2				5,000	5,260							
SPT-3G				159	1,400		1,000					
General							200			200	200	
TOTAL - HEP (SBIR removed)	790,811	775,578	790,860	727,523								
TOTAL - HEP (incl ~ \$21M SBIR)					796,521	744,000	766,000	788,000	776,000	788,000	754,900	795,000