



# NSF Budget Update

## February 26, 2016

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# Top-Level Summary

- President's FY 2017 Request Budget recognizes the importance of science and NSF, with a total increase of 6.5% in the Research and Related Activities account and 6.4% for AST.
- NSF and AST are pleased with this recognition of the importance of core science, and the targeting of the proposed increases.
- We are prepared to execute the President's Request Budget, should Congress appropriate the requested funds.
- Should the Request be appropriated, the AST ratio of facility operations costs to small awards would shift slightly toward small awards, with the ratio being similar to that existing prior to the Portfolio Review (2010-2011).

# The President's Request to Congress



	FY 2016 (Estimate)	FY 2017 (Total Request)	
NSF	\$ 7463 M	\$ 7964 M	6.7%
R&RA	\$ 6034 M	\$ 6425 M	6.5%

## Two Components to R&RA

Discretionary	\$ 6034 M	\$ 6079 M	0.8%
Mandatory	--	\$ 346 M	--
		<hr/>	
<b>Total</b>	<b>\$ 6034 M</b>	<b>\$ 6425 M</b>	<b>6.5%</b>

\*Direct spending (not subject to discretionary caps)

One-year duration

Mathematical and Physical Sciences



# FY 2017 NSF Request by Account (\$M)

	FY 2016 Estimate	FY 2017 Discretionary		FY 2017 Mandatory	FY 2017 Total	
Research & Related Activities	\$ 6034	\$ 6079	0.8%	\$ 346	\$ 6425	6.5%
Education & Human Resources	880	899	2.1%	54	953	8.3%
Major Res Equip & Facilities Const.	200	193	-3.6%		193	-3.6%
Agency Operations & Award Mgmt.	330	373	13%		373	13%
National Science Board	4	4			4	
Office of the Inspector General	15	15			15	
<b>Total NSF</b>	<b>\$ 7463</b>	<b>\$ 7564</b>	<b>1.3%</b>	<b>\$ 400</b>	<b>\$ 7964</b>	<b>6.7%</b>



# FY 2017 MPS Request by Division (\$M)

	FY 2016 Estimate	FY 2017 Discretionary		FY 2017 Mandatory	FY 2017 Total	
Astronomical Sciences (AST)	\$ 246.73	\$ 247.73	0.4%	\$ 14.88	\$ 262.61	6.4%
Chemistry (CHE)	246.31	247.31	0.4%	14.85	262.16	6.5%
Materials Research (DMR)	310.03	311.03	0.3%	18.68	329.71	6.3%
Mathematical Sciences (DMS)	234.05	235.05	0.4%	14.12	249.17	6.5%
Physics (PHY)	277.03	278.53	0.5%	16.73	295.26	6.6%
Multidisciplinary Activities (OMA)	35.00	35.41	1.2%	2.13	37.54	7.3%
<b>Total MPS</b>	<b>\$ 1349.15</b>	<b>\$ 1355.06</b>	<b>0.4%</b>	<b>\$ 81.39</b>	<b>\$ 1436.45</b>	<b>6.5%</b>



# FY 2017 Budget Request--AST

<b>\$M</b>	<b>FY15 Actual</b>	<b>FY16 Request</b>	<b>FY16 Estimate</b>	<b>FY17 Request Total</b>	<b>FY17 Request Disc.</b>
NSF Total	7344	7724	7464	7964	7564
NSF R&RA	5934	6186	6034	6425	6079
MPS	1337	1366	1349	1436	1355
<b>AST</b>	<b>245.2</b>	<b>246.5</b>	<b>246.7</b>	<b>262.6</b>	<b>247.7</b>
MREFC	200.8	200.3	200.3	193.1	193.1

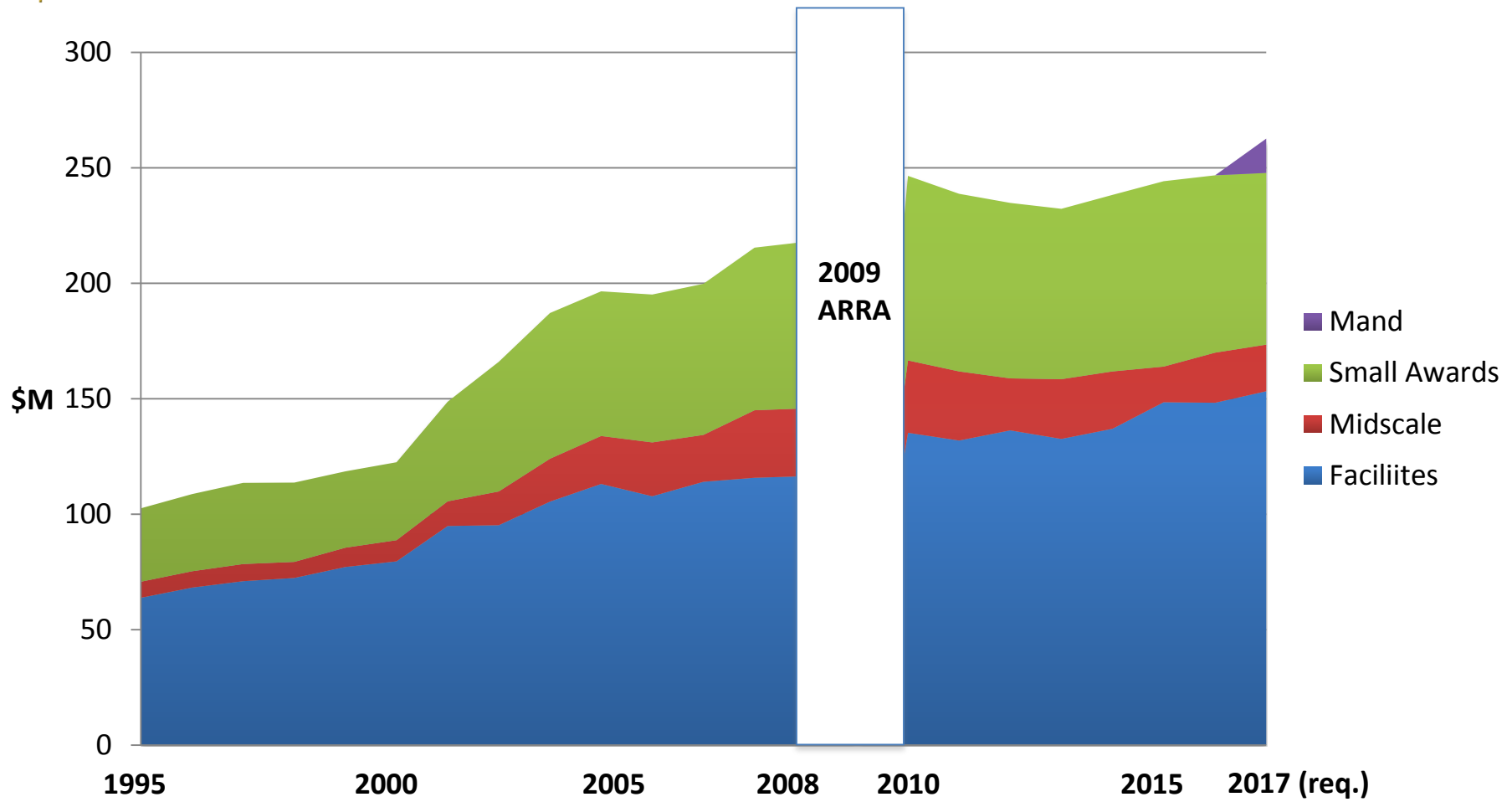


# Mandatory vs. Discretionary

- “Discretionary” spending adheres to the two-year budget levels passed by Congress in late 2015
- “Mandatory” spending is spending that is funded by a dedicated revenue stream, and requires a Congressional action separate from the standard appropriation bill
  - An example is Social Security, with a dedicated revenue stream from salary withholding and employer contributions
  - NSF currently has a small amount of mandatory revenue from visa-waiver program
  - The FY 2017 request includes one year of “mandatory” spending for NSF



# AST Budget Breakdown, 1995-2017



- 2016 estimate and 2017 request are now shown





# FY 2016/2017: Things to Note

- FY 2016 Estimate relative to FY 2015 Actuals
  - Facilities flat: DKIST and NSO ramp up, NOAO and NRAO go down
    - One-time NSO funding for GONG refurbishment
  - MSIP up by \$6.3 million, from \$12.95 million to \$19.25 million
  - EARS drops from \$6 million to \$1 million, so AAG is likely to be fairly steady
  
- FY 2017 Request relative to FY 2016 Estimate
  - Facilities rise by \$5 million: DKIST and ALMA up, NSO down
    - GBO and VLBA separate from NRAO
  - MSIP drops by \$1.25 million to \$18.00 million
  - Small awards drop by \$2.5 million in discretionary request, plus another \$14.88 million increase in mandatory spending
  - Mandatory spending is targeted to early career awardees

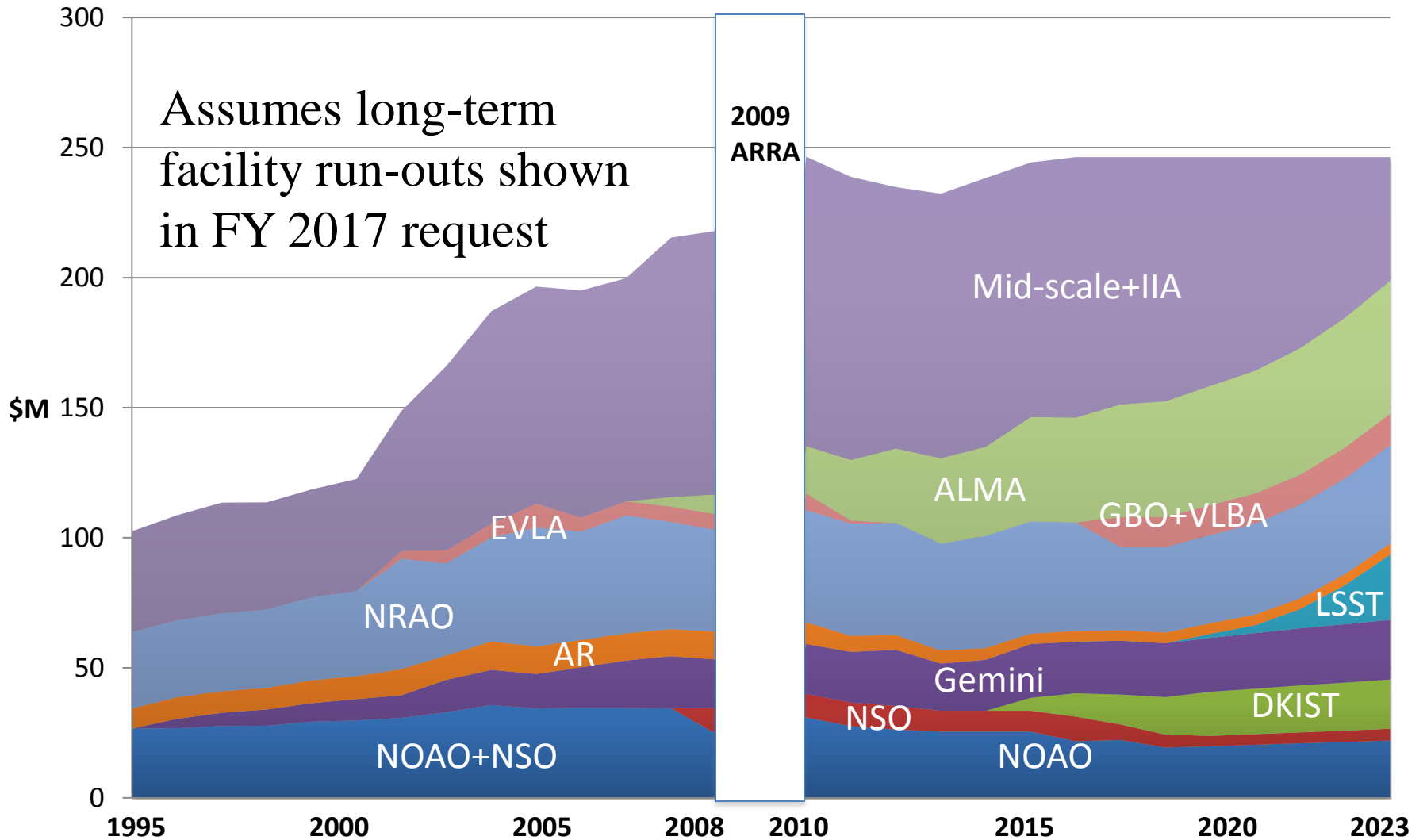


# From FY 2017 Request “Overview”

- P. 2: “New one-year mandatory funding totaling \$400 million will support the fundamental, curiosity-driven research that is NSF’s principal contribution to the Nation’s science and technology enterprise. In particular, this funding will support more scientists and engineers at the early stages of their careers - who bring particular expertise in data- and computationally-intensive activities”
- P. 7: “In FY 2017, support for several of NSF’s astronomy and astrophysics facilities investments reaches a decision point. ... Based on [the portfolio review] recommendations, NSF is developing potential divestment options for several facilities.”

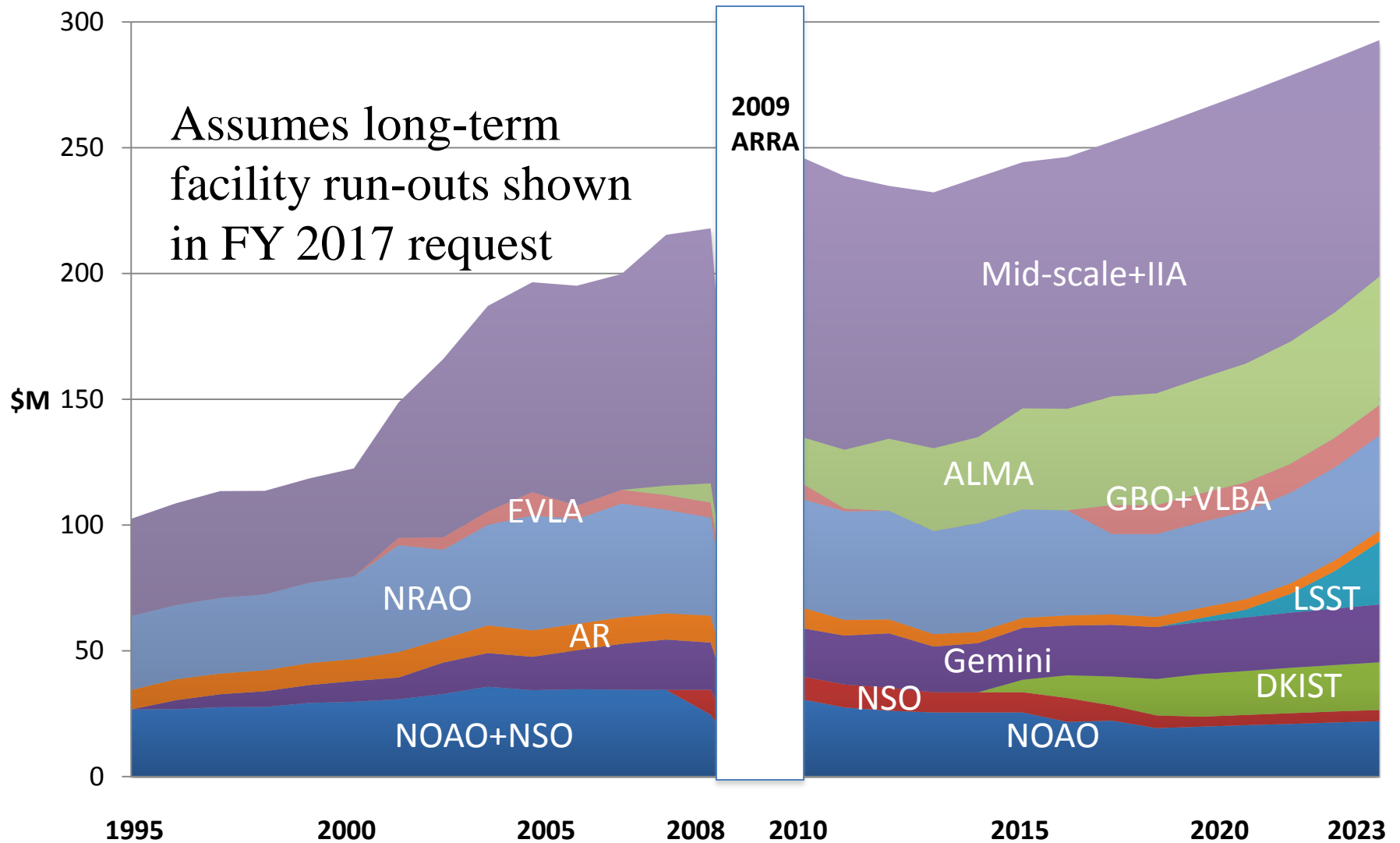


# AST, Hypothetical 0.0%/yr Increase after FY16





# AST, Hypothetical 2.5%/yr increase after FY16

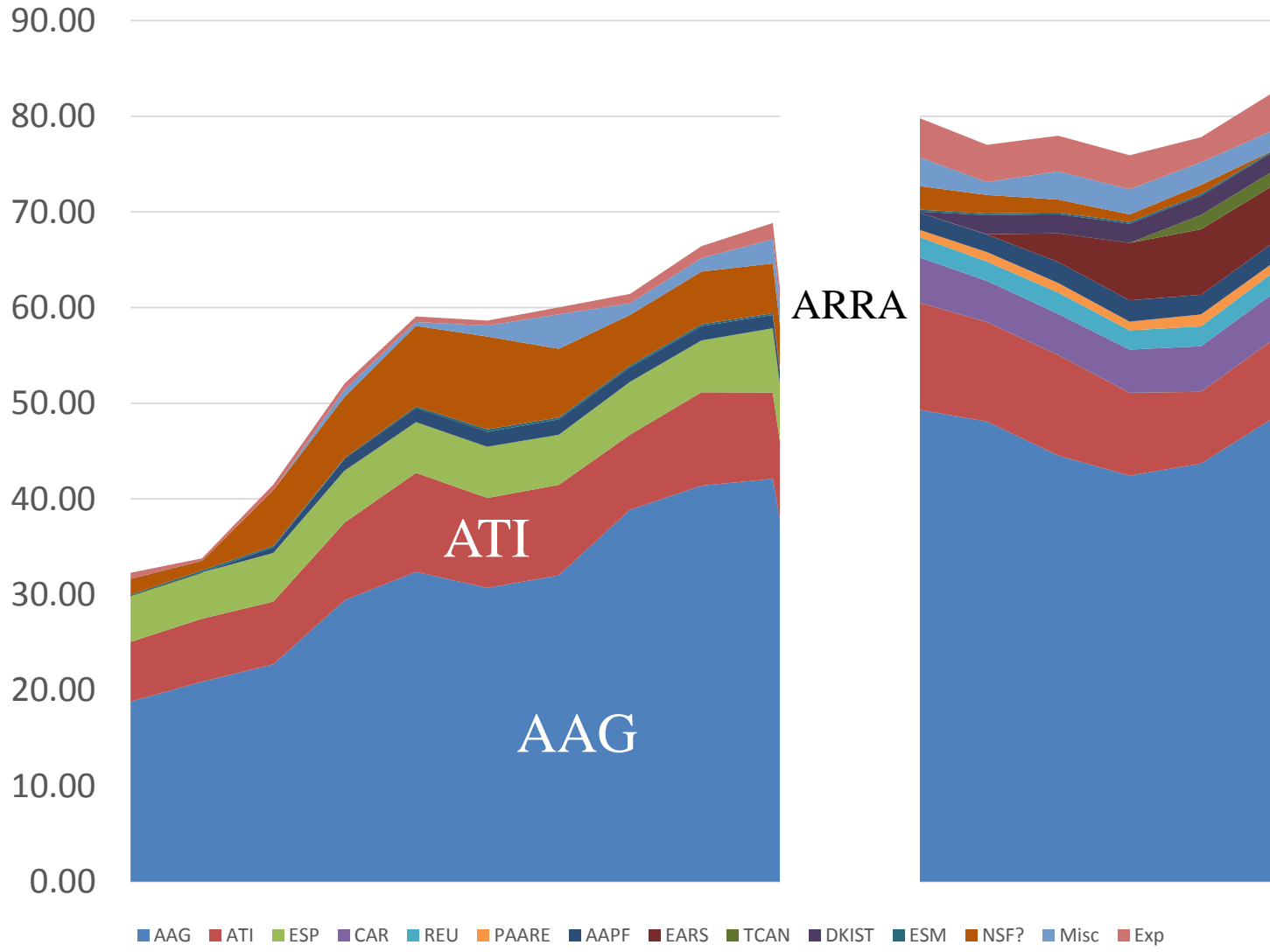




# Additional Budget Material



# Small Awards



1999

2005

2010

2015

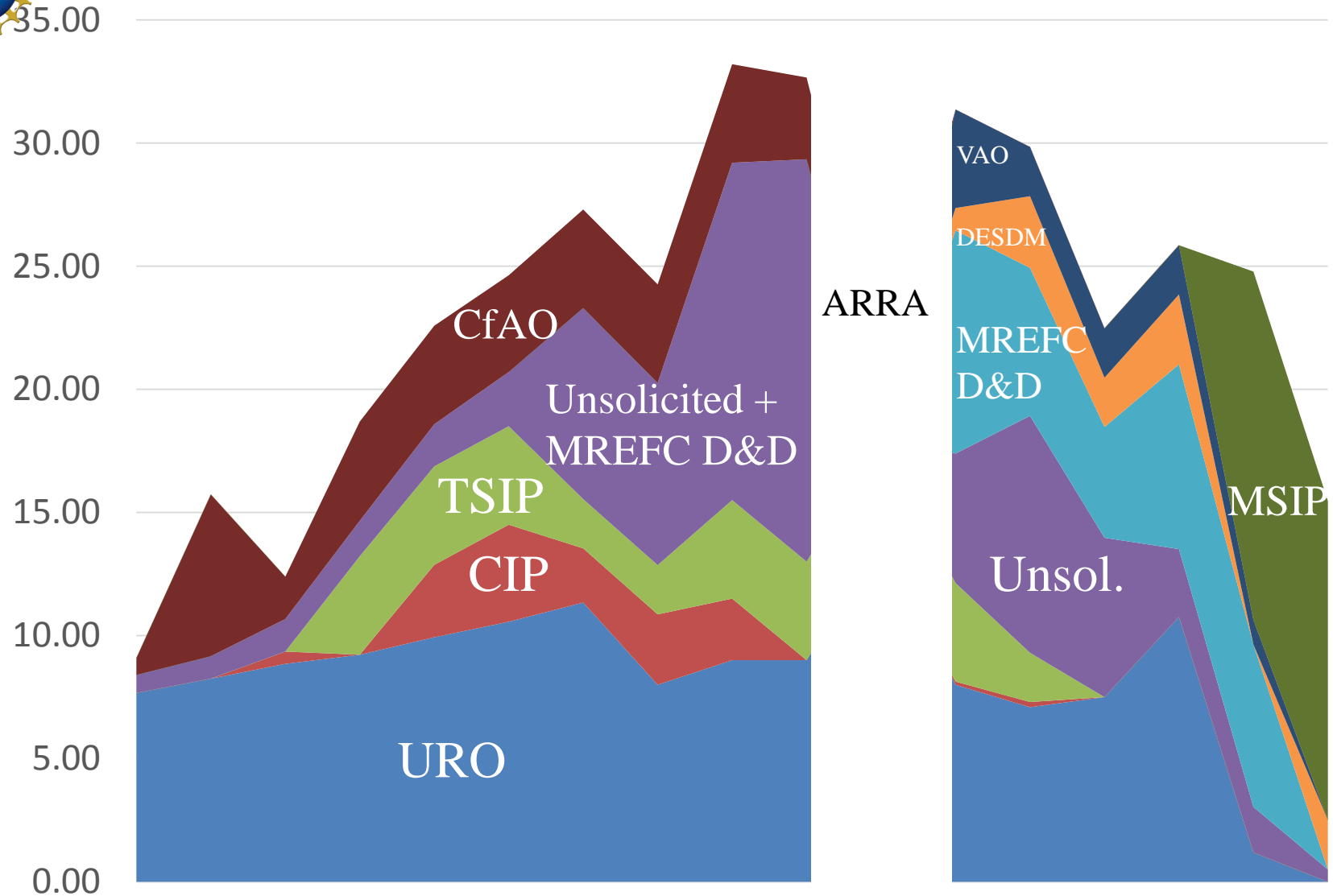


# Notes to Individual Investigator Programs

- Data on individual investigator programs prior to 2010 are broken down in different categories from data post-2009, so many categories are not directly comparable
- For example, the chart has no separable data for programs such as CAREER and REU prior to 2010
- 1999-2008 data taken from NSF input to the decadal survey Demographics Study Group



# Mid-Scale



1999

2005

2010

2015



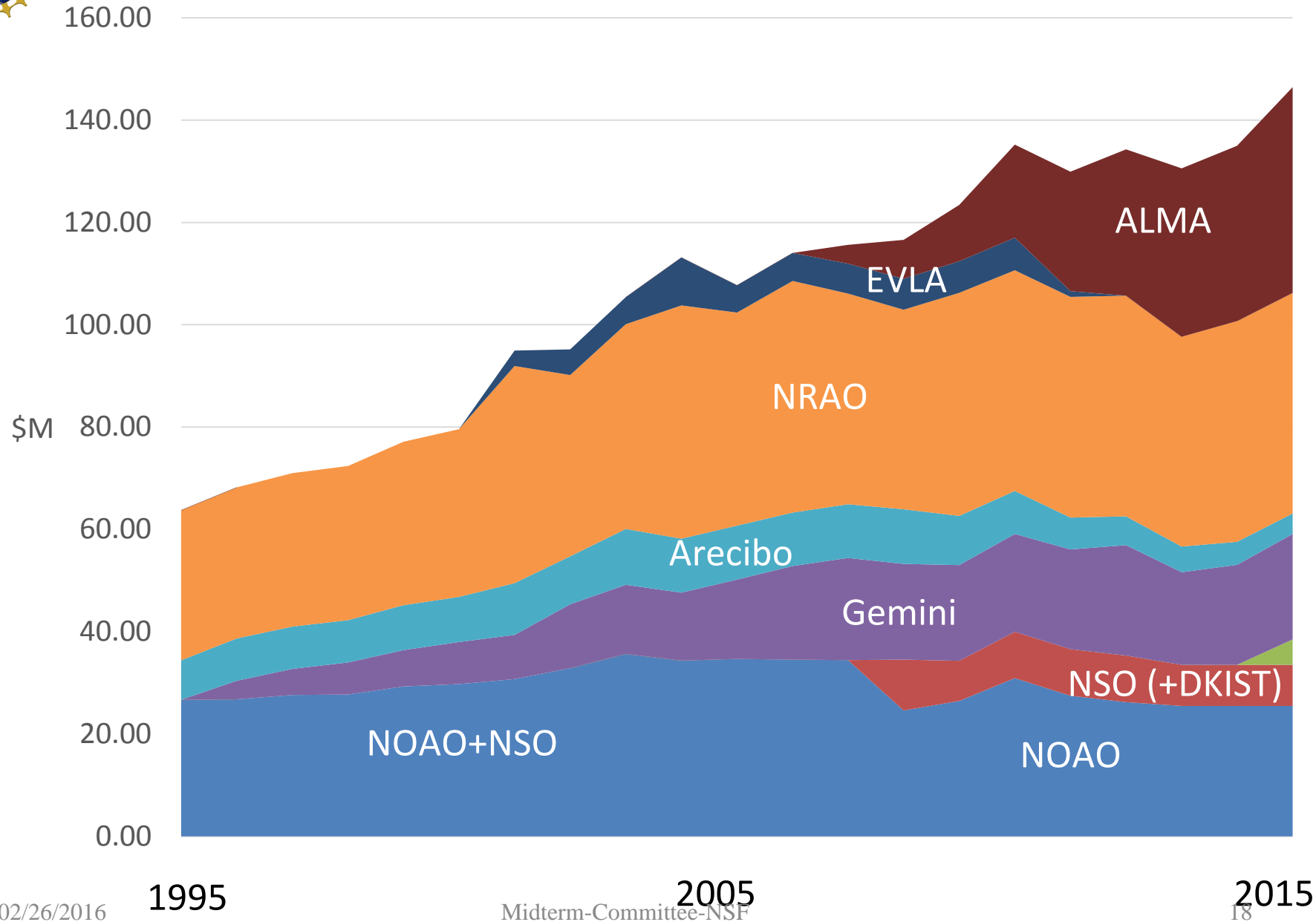


# Notes to Mid-Scale

- Mid-scale plot includes all types of proposals currently included within MSIP solicitation.
- Data were categorized differently before 2010. For example, the MREFC Design & Development programs (LSST, GSMT, SKA) and NVO=VAO are not easily separable from Unsolicited programs prior to 2010.
- CIP=Community Instrumentation Programs was primarily the Adaptive Optics Development Program



# Facility Ops





# Notes on Facility Operations

- NOAO and NSO were combined within a single organization until ~2008, and are not separable prior to that date
- EVLA construction was included in the NRAO operations budget, but is shown separately to aid in interpretation
- MREFC data are not included
- Most observatories received extra (stimulus) funding for infrastructure renewal in 2009; those funds are not shown here