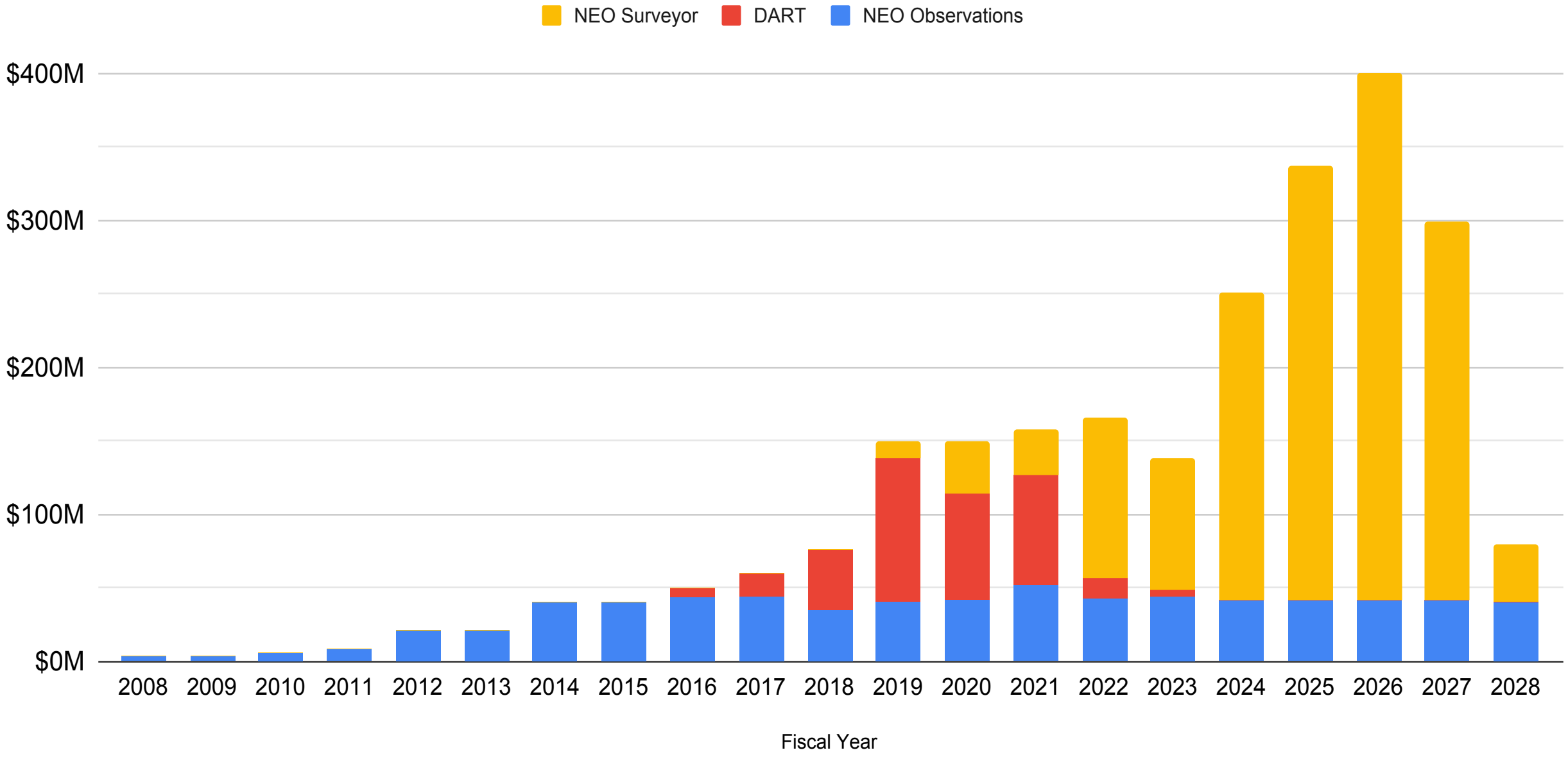
HOW PLANETARY DEFENSE GREW MORE THAN 4000% IN 15 YEARS

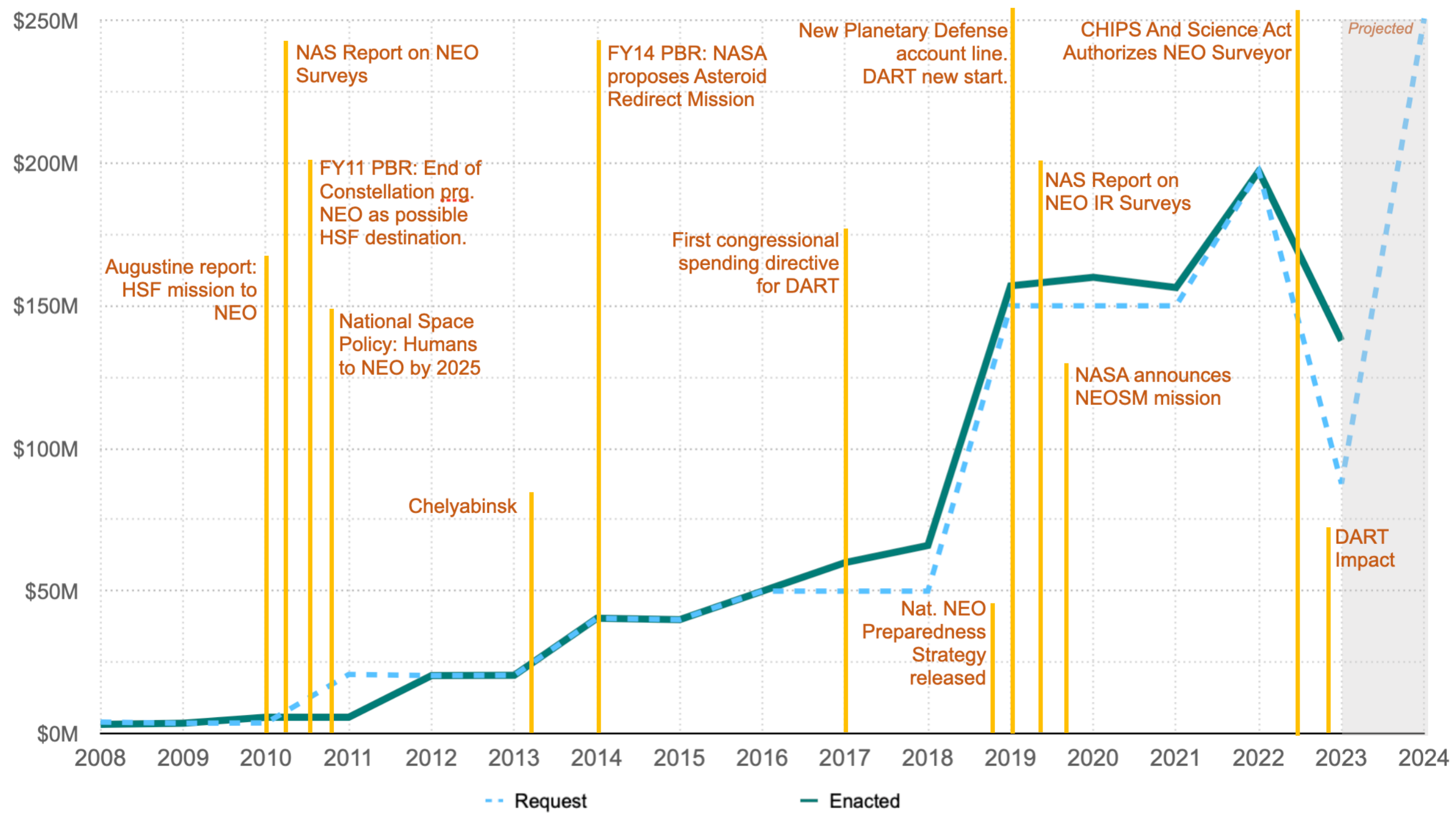
AN ANALYSIS


NEO Surveyor
DART
NEO Observations
$400M
$300M
$200M
$100M
$0M
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028
Fiscal Year

External events drive policy

Internal events drive funding

Year	External Event	Policy	Funding Request
1989	4581 Asclepius close approach		N/A
1990	Discovery of Chicxulub impact crater	Congress mandates “Spaceguard” study in the 1990 NASA Authorization	N/A
1992	Comet 109P/Swift-Tuttle rediscovery		N/A
1994	Shoemaker-Levy 9 Jupiter Impact	Congress requests a 1-km NEO survey program in House 1994/95 NASA Authorization	N/A
2004	Apophis close approach		~$4M/yr
2005		140m NEO survey mandated in 2005 NASA Authorization. NASA Act amended with planetary defense responsibility.	~$4M/yr
2013	Chelyabinsk bolide		$20M
2014		House NASA Authorization reiterates 140m NEO survey mandate and calls for a budget to enable the 2020 goal.	$40M


$250M
$200M
$150M
$100M
$50M
$0M
2008
2009
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2020
2021
2022
2023
2024
Projected
Augustine report: HSF mission to NEO
NAS Report on NEO Surveys
FY11 PBR: End of Constellation prg. NEO as possible HSF destination.
National Space Policy: Humans to NEO by 2025
Chelyabinsk
FY14 PBR: NASA proposes Asteroid Redirect Mission
First congressional spending directive for DART
New Planetary Defense account line. DART new start.
Nat. NEO Preparedness Strategy released
NAS Report on NEO IR Surveys
NASA announces NEOSM mission
CHIPS And Science Act Authorizes NEO Surveyor
DART Impact
Request
Enacted

CONCLUSIONS

1. External events drive planetary defense policy
2. Supportive policy does not guarantee funding
3. Funding growth came mostly at the behest of NASA
4. Program alignment drove funding requests
5. Planetary defense struggled to compete for science funding
6. Outcomes are sensitive to individual initiative