

Shipbuilding and Expeditionary Warfare Operations

February 2, 2021

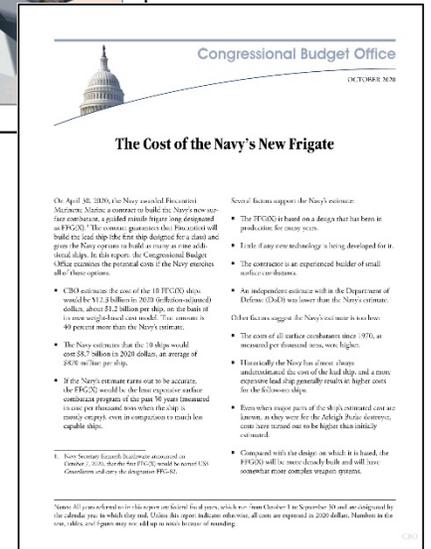
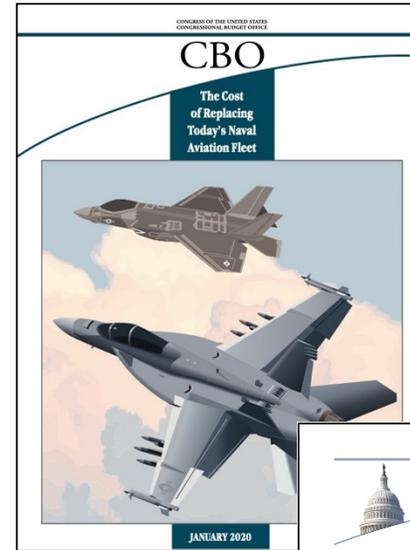
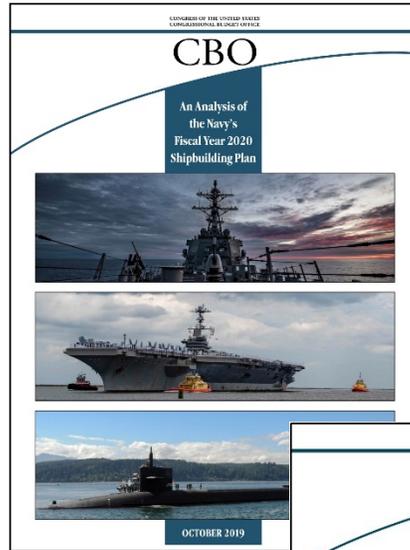
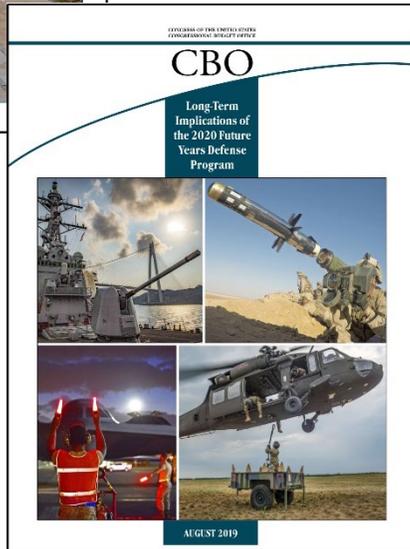
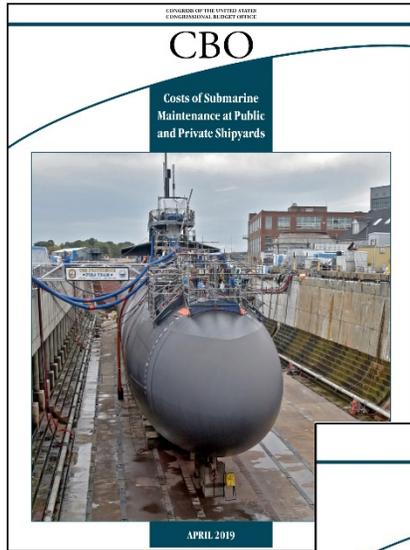
Presentation at the 2021 Virtual Expeditionary Warfare Conference

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CBO's Relevant Reports



Prospects for Building a Larger Fleet

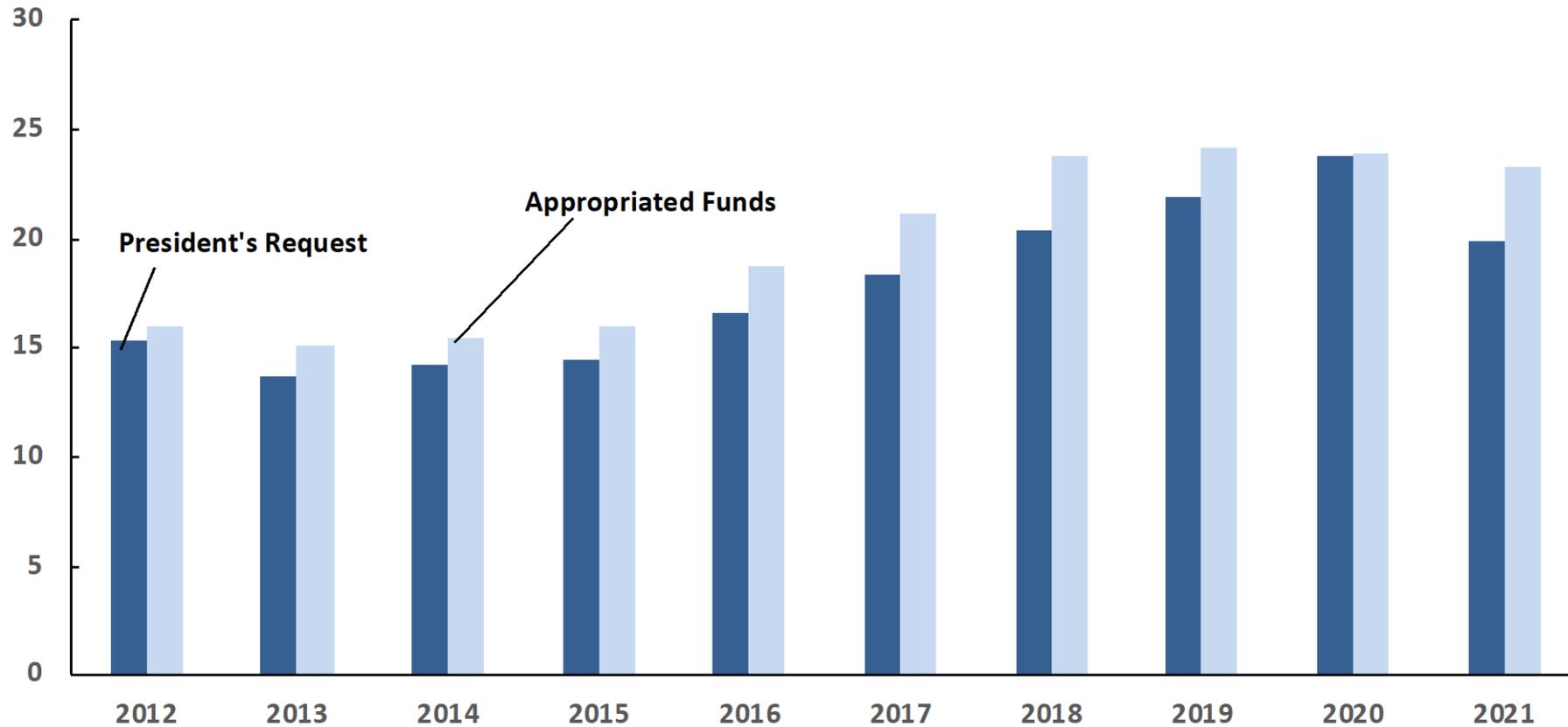
- Congressional Support for Shipbuilding
- The Navy's New Shipbuilding Plan
- The New Shipbuilding Plan in Historical Context
- The Challenges of Building a Larger Fleet



Congressional Support for Shipbuilding

Requested and Appropriated Shipbuilding Budgets, 2012 to 2021

Billions of Dollars



From 2012 to 2021, the Congress appropriated \$1.9 billion per year more, on average, than the President requested.

The Navy's 2012 Shipbuilding Plan Compared With Enacted Appropriations in the Budget Control Act Era, 2012 to 2021

Ship Type	2012 Shipbuilding Plan	Enacted Appropriations	Difference
Aircraft Carriers	2	3	1
Ballistic Missile Submarines	1	1	0
Attack Submarines	19	20	1
Destroyers	16	22	6
Frigates	0	2	2
Littoral Combat Ships	32	27	-5
Amphibious Warfare Ships	6	7	1
Logistics and Support Ships	<u>30</u>	<u>28</u>	<u>-2</u>
Total	106	110	4
Large Combat Ships	44	55	11
Small Combat and Support Ships	62	55	-7



The Navy's New Shipbuilding Plan



The Future Naval Forces Study's Larger and More Distributed Fleet

Ship Type	2016 FSA Inventory Goals	FNFS Inventory Goals	Difference
Aircraft Carriers	12	8 to 11	-1 to -4
Light Carriers	0	0 to 6	0 to 6
Ballistic Missile Submarines	12	12	0
Attack and Large Payload Submarines	66	72 to 78	6 to 12
Large Surface Combatants	104	73 to 88	-16 to -31
Small Surface Combatants	52	60 to 67	8 to 15
Large Amphibious Warfare Ships	12	9 to 10	-2 to -3
Small Amphibious Warfare Ships	26	52 to 57	26 to 31
Logistics and Support Ships	71	96 to 117	25 to 46
Unmanned Surface Vehicles	n.a.	119 to 166	n.a.
Unmanned Underwater Vehicles	<u>n.a.</u>	<u>24 to 76</u>	<u>n.a.</u>
Total Manned Ships	355	382 to 446	27 to 91
Total Unmanned Systems	n.a.	143 to 242	n.a.
Total Manned and Unmanned	355	525 to 688	170 to 333

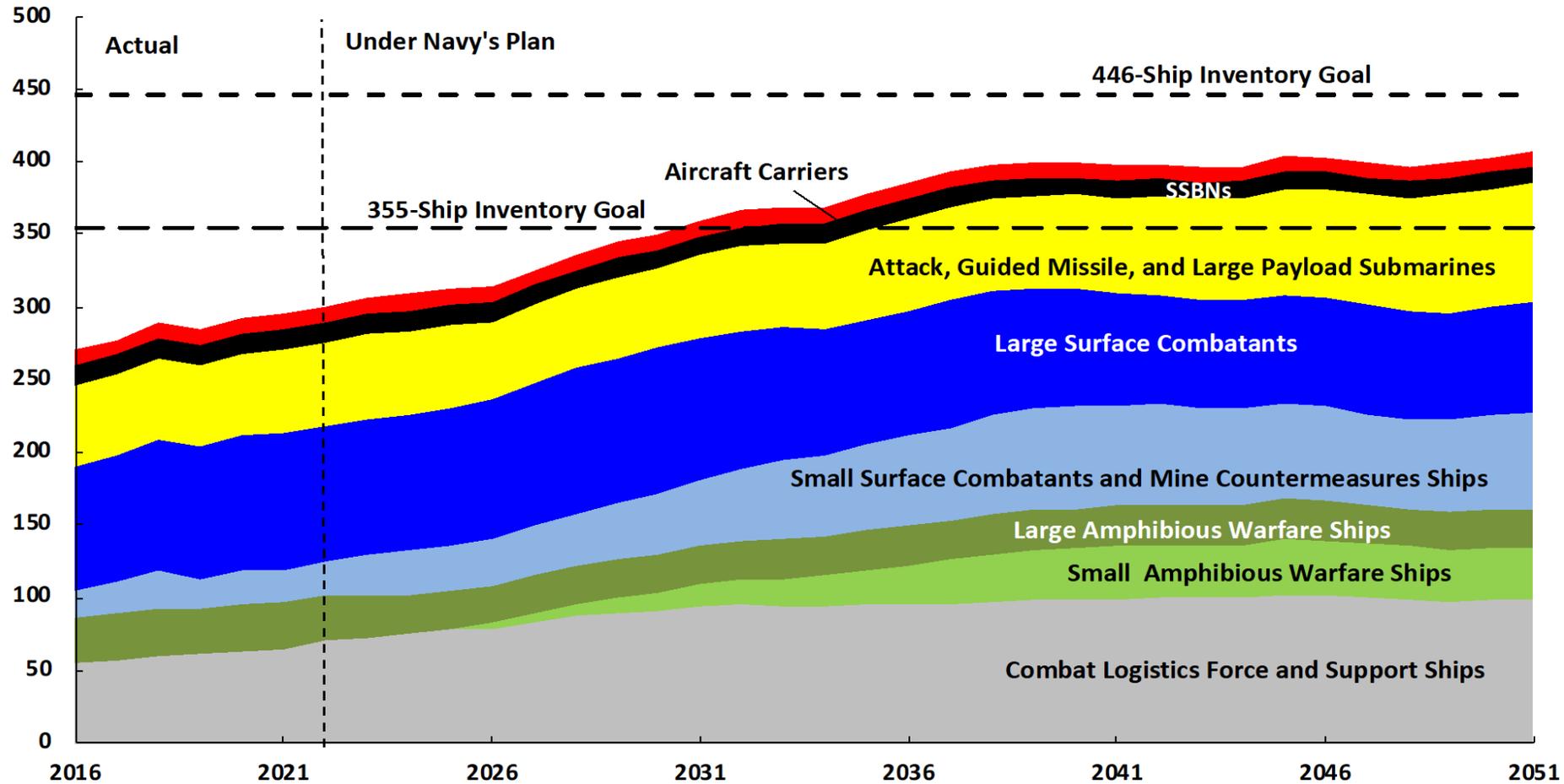
Ship Purchases Under the Navy's Fiscal Year 2020 and December 9, 2020, Shipbuilding Plans

Ship Type	Fiscal Year 2020 Plan	December 9, 2020, Plan	Difference
Aircraft Carriers	7	6	-1
Light Carriers	0	0	0
Ballistic Missile Submarines	12	11	-1
Attack and Large Payload Submarines	66	81	15
Large Surface Combatants	76	55	-21
Small Surface Combatants	58	76	18
Large Amphibious Warfare Ships	28	16	-12
Small Amphibious Warfare Ships	0	55	55
Logistics and Support Ships	57	104	47
Unmanned Surface Vehicles	n.a.	179	n.a.
Unmanned Underwater Vehicles	<u>n.a.</u>	<u>44</u>	<u>n.a.</u>
Total Manned Ships	304	404	100
Total Unmanned Systems	n.a.	223	n.a.
Total Manned and Unmanned	304	627	323

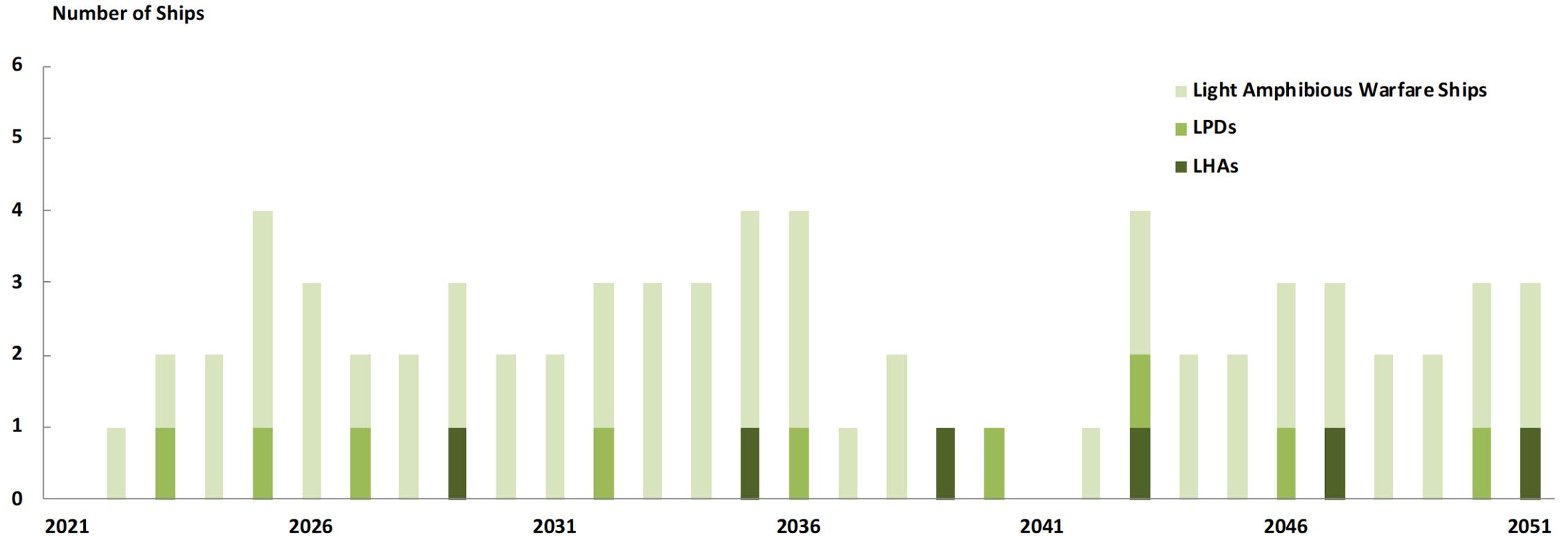


Manned Ships Under the Navy's December 9, 2020, Plan

Number of Ships

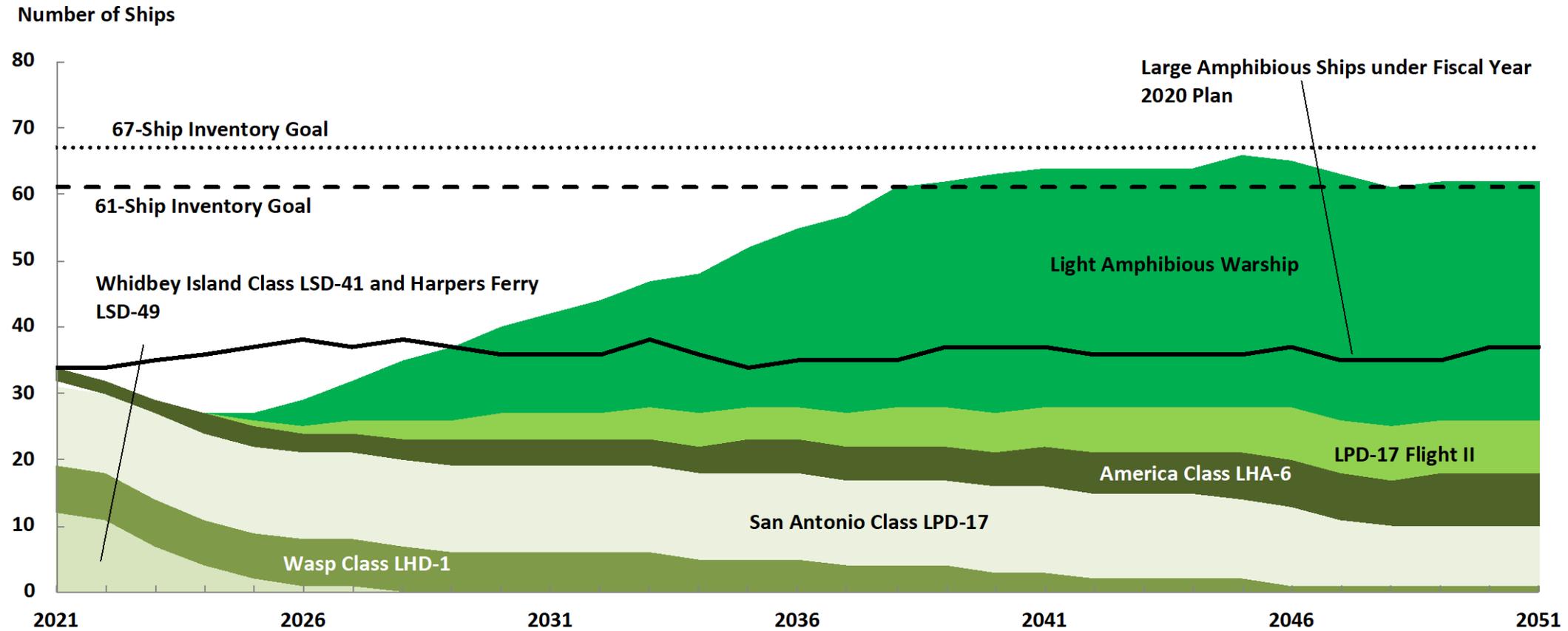


Purchases of Amphibious Ships Under the Navy's December 9, 2020, Plan

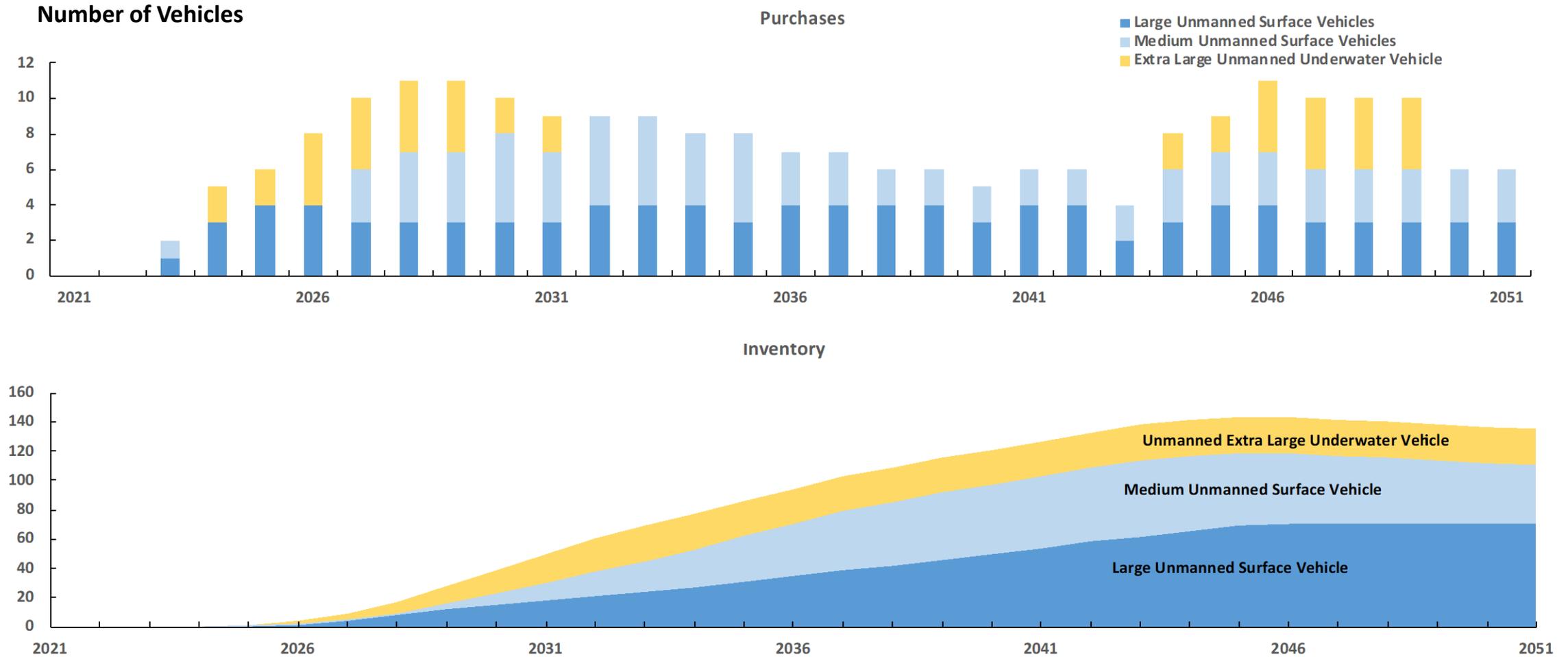




Amphibious Warfare Ship Inventory Under the Navy's December 9, 2020, Plan



Unmanned Surface and Underwater Vehicles Under the Navy's December 9, 2020, Plan

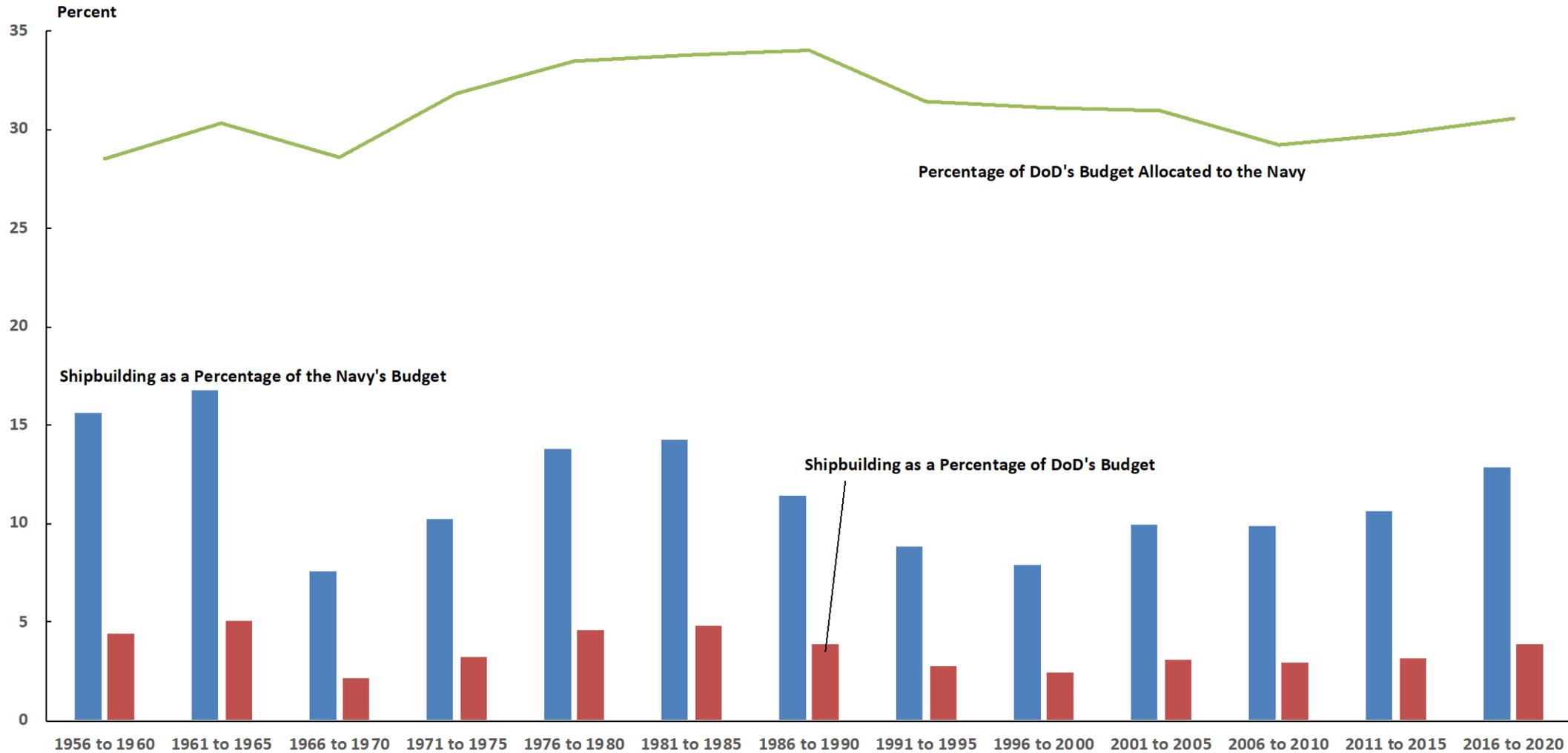


The New Shipbuilding Plan in Historical Context

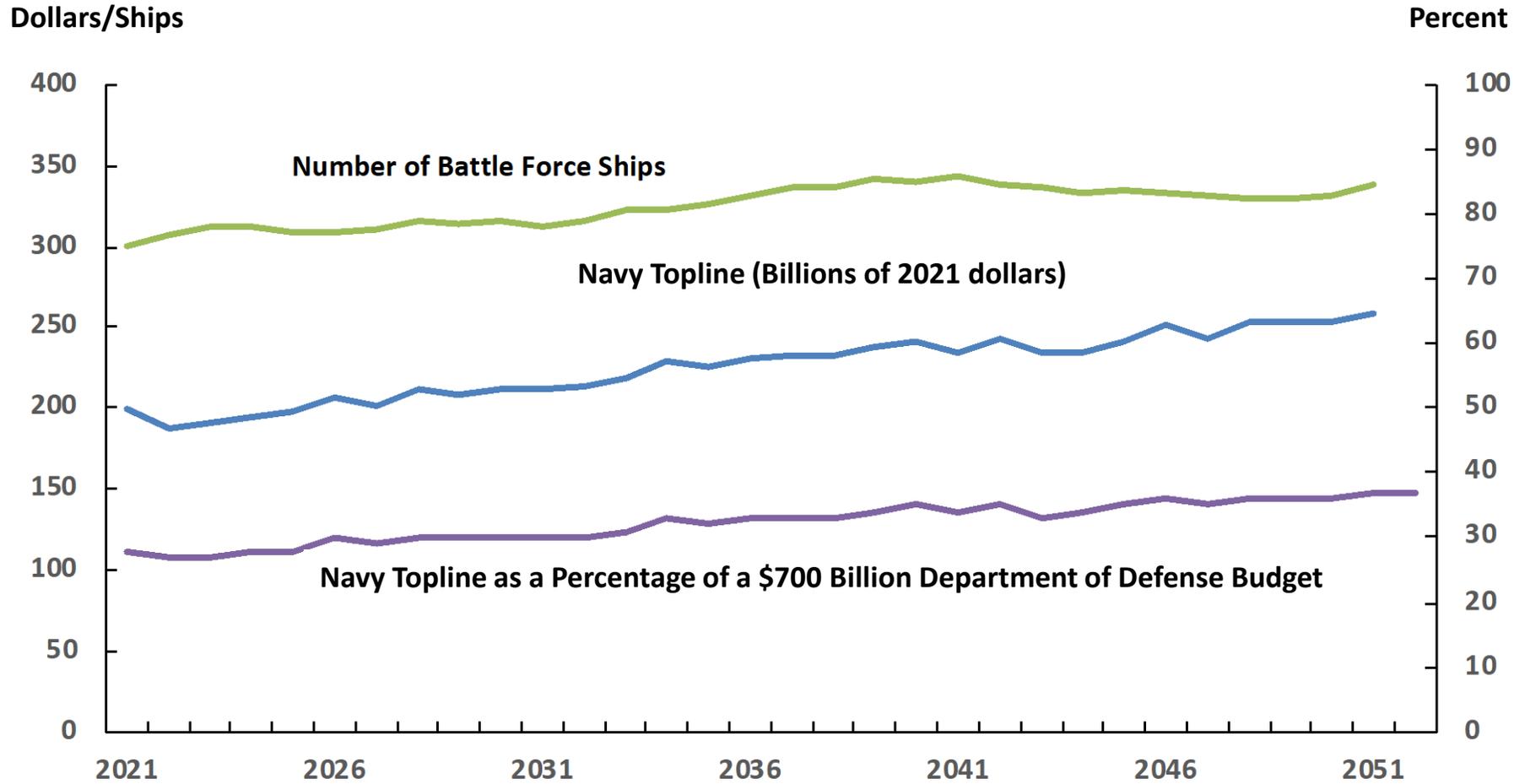
Percentage of Average Annual Shipbuilding Costs, by Major Category, Under the Navy's Recent Plans

Ship Type	Historical, 1990–2019	Navy Estimates Under Fiscal Year 2020 Plan	Navy Estimates Under December 9, 2020, Plan
New-Ship Construction			
Aircraft Carriers	11	12	10
Submarines	26	43	50
Surface Combatants	34	24	20
Amphibious Warfare Ships	11	8	5
Combat Logistics and Support Ships	<u>5</u>	<u>4</u>	<u>4</u>
Subtotal	86	91	90
Unmanned Systems	0	0	3
Carrier Refueling and Other Items	<u>14</u>	<u>10</u>	<u>7</u>
Total	100	100	100
Memorandum:			
Total Cost (Billions of 2021 dollars)	495	680	938

Shipbuilding as a Percentage of the Department of the Navy's and the Department of Defense's Budgets



Estimated Navy Topline Required to Build and Sustain a 355-Ship Fleet, 2021 to 2051



A larger fleet costs more to build and operate over time.



The Challenges of Building a Larger Fleet

The Challenges of Building a Larger Fleet

- Paying for a Future Fleet
- Cost Growth in Ship Programs
- Designing and Building New Ships
- Industrial Base

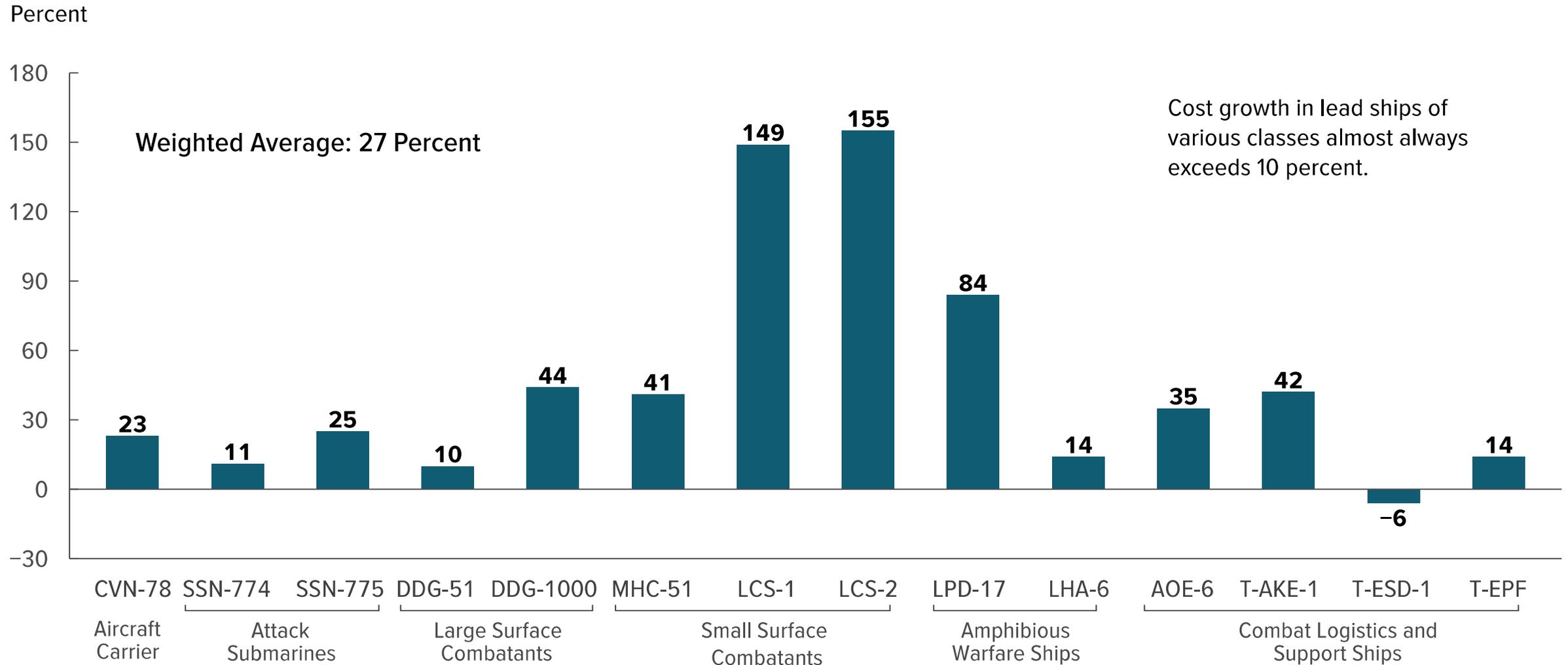
Illustrative Average Annual Steady-State Shipbuilding Costs Under the Navy's Future Naval Forces Study

Ship Type	FNFS Goals (Number of ships)		Service Life (Years)		Cost (Billions of 2020 dollars)	
	Low	High	Low	High	Low	High
Aircraft Carriers	8	11	50	50	2.1	2.9
Light Carriers	0	6	40	45	0	0.6
Ballistic Missile Submarines	12	12	42	42	2.3	2.3
Attack and Large Payload Submarines	72	78	33	42	9.2	11.2
Large Surface Combatants	73	88	35	40	5.1	7.0
Small Surface Combatants	60	67	20	30	2.0	2.9
Amphibious Warfare Ships	61	67	20	45	1.9	2.3
Logistics and Support Ships	<u>96</u>	<u>117</u>	<u>30</u>	<u>45</u>	<u>1.2</u>	<u>2.0</u>
Total Manned Ships	382	446	n.a.	n.a.	24.3	31.0
Total Unmanned Systems	143	242	10	15	0.9	2.5
Total Steady-State New-Ship Construction	525	688	n.a.	n.a.	25.2	33.5
Total Steady-State Shipbuilding	525	688	n.a.	n.a.	27.2	35.5

CBO used the unit cost for ships in its October 2019 analysis of the Navy's fiscal year 2020 shipbuilding plan and the inventory goals in the Navy's December 9, 2020, plan to calculate those costs. Unit costs for unmanned systems are based on the estimates in the Navy's 2021 budget. FNFS = Future Naval Forces Study; n.a. = not applicable.



Cost Growth on Lead Ships, 1985 to 2015



Cost of the Navy's Surface Combatants per Thousand Tons of Lightship Displacement—Approximately the First 10 Ships

Millions of 2020 Dollars

