DEPARTMENT OF THE NAVY
FISCAL YEAR (FY) 2020
BUDGET ESTIMATES

JUSTIFICATION OF ESTIMATES
MARCH 2019

Navy Working Capital Fund (NWCF)

The estimated cost for this report for the Department of the Navy (DON) is $112,616.

The estimated total cost for supporting the DON budget justification material is approximately $1,803,116 for the 2019 fiscal year. This includes $81,351 in supplies and $1,721,765 in labor.

NAVY WORKING CAPITAL FUND (NWCF)

The Navy Working Capital Fund (NWCF) is a revolving fund that finances the Department of the Navy (DON) activities which provide products and services on a reimbursable basis. Unlike for-profit commercial businesses, who's financial goal is to maximize profit, the NWCF activities' financial goal is to break even over the budget cycle. The NWCF provides stabilized pricing to customers and acts as a shock-absorber to fluctuations in market prices during the year of execution; fluctuations are recovered from customers in future years. The wide range of goods and services provided by NWCF activities are crucial to restoring readiness, improving lethality, and modernization.

Consistent with the National Defense Strategy, the FY 2020 NWCF budget is reforming business structures and practices for greater performance and affordability. Navy business reform initiatives impacting the NWCF include:

- The Facilities Engineering Commands (FECs) are realigned from NWCF to mission funding in FY 2020. This realignment consolidates shore establishment funding, accounting and budgeting processes to improve support to the Navy Shore infrastructure. This reform initiative removes $3.1 Billion from the NWCF and realigns 9,542 Full-Time Equivalents (FTEs) to Operation and Maintenance, Navy (O&M,N).
- The Navy Supply (NAVSUP) NWCF and mission funded workforce is rebalanced and realigned to better support overall Navy supply management functions. This reform initiative realigns 1,972 FTEs within the NWCF reimbursable workforce to mission funding in O&M,N.
- The Expeditionary Warfare Center (EXWC) is realigned from the NWCF Base Support to the NWCF Research and Development business area. This realignment reflects the designation of EXWC as a Science and Technology Reinvention Laboratory (STRL).

After reform initiatives and realignments, discussed above, the FY 2020 NWCF maintains a workforce of 78,579 civilian and 1,183 military personnel. Effective FY 2020 the NWCF will be comprised of four primary business areas with 27 sites located across the country and over 120 detachments located globally. The four business areas are as follows:

- Supply Management. Performs inventory oversight functions that result in the sale of aviation and shipboard components, ship's store stock, repairables, and consumables to a wide variety of customers.
- Depot Maintenance. Provides worldwide maintenance, engineering, and logistics support through mobilization, repair of aircraft, engines, components, and weapons systems, and the manufacture of parts and assemblies.
- Transportation. Provides over-ocean movement of supplies and provisions to deployed forces, and maintains prepositioned equipment and supplies.
- Research and Development. Supports weapons systems, facilities and equipment for the air, land, sea, and space operating environments through development, engineering, acquisition, in-service support, and repair and maintenance.

The FY 2020 NWCF budget request reflects the DON's continued focus on balancing demands to ensure the right blend of goods and services are provided at the right cost. The value of these goods and services provided by NWCF activities in FY 2020 is projected to be approximately $29.4 billion, as shown in Figure 1. The FY 2020 budget request reflects a decrease of $3.3 billion, or 10.0% from FY 2019. The cost decrease is primarily attributable to the realignment of the Facility Engineering Commands (FECs) from the NWCF Base Support business area to mission funding. The Research and Development business area reflects growth primarily due to the realignment of the EXWC from Base Support to the Research and Development.

Figure 1 - Summary of NWCF Costs

(Dollars in Millions)	**FY 2018**	**FY 2019**	**FY 2020**
Operating Costs			
Supply - Obligations	9,089.1	9,322.5	8,412.6
Depot Maintenance - Aircraft	2,468.7	2,367.9	2,395.6
Depot Maintenance - Marine Corps	354.3	422.1	411.4
Transportation	3,045.3	2,934.7	3,314.3
Research and Development	13,796.3	14,469.1	14,727.6
Base Support	3,169.4	3,165.1	165.9
Total	**31,923.0**	**32,681.5**	**29,427.4**

Supply Management

Supply Management is the central element assuring afloat and ashore operating forces and their equipment have the necessary supplies, spare parts, and components to conduct military engagements, various types of training, and any potential contingency. Ensuring the right material is provided where it matters, when it matters, and at the right cost is vital to equipping and sustaining Navy and Marine Corps warfighting units. Supply Management performs inventory oversight functions that result in the sale of aviation and shipboard components, ship's store stock, repairables, and consumables to a wide variety of customers. Supply Management also provides strong sailor and family support through contracting, resale, transportation, food service, and other quality of life programs. Costs related to supplying material to customers are recouped through stabilized rate recovery processes.

Depot Maintenance

The Fleet Readiness Centers (FRCs) and Marine Corps Depots perform depot maintenance functions to ensure repair, overhaul, and timely upgrades of the right types and quantities of aircraft, weapons systems, and support equipment in order to ensure our ability to rapidly respond to global crises. Work completed at the FRCs and Depots ensure deployed and next-to-deploy units have the battle-ready items they need to train, fight, and win today while supporting the force to win tomorrow. Forward-deployed individuals perform time-critical repair and upgrade functions in-theater, alongside the service members they support.

Since current demand for naval forces exceed supply, the FRCs are essential for mobilization; repair of aircraft, engines, and components; and the manufacture of associated parts and assemblies. Additionally, the FRCs overhaul and repair a wide range of equipment and components. They provide engineering services in the development of hardware design changes and furnish technical and other professional services on maintenance and logistics issues.

The Marine Corps Depots provide engineering, manufacturing, re-manufacturing, preservation, calibration, fabrication, technical evaluation, and other services required to

maximize the readiness and sustainability of ground combat and combat support weapon systems, associated parts, assemblies, and subassemblies. Such quality products and responsive maintenance support services help maintain a core industrial base in support of Department of Defense (DoD) operating forces mobilization, surge, reset, and reconstitution requirements.

Transportation

Over-ocean movement of supplies and provisions to the deployed operating forces is a primary focus of this group; it also maintains prepositioned equipment and supplies as well as other special mission services. These combine to support the Navy and the Marine Corps in deterring potential threats and promptly responding to crises in the maritime crossroads.

Transportation is the responsibility of the Military Sealift Command (MSC) whose major clients include the Fleet Commanders for U.S. Pacific Fleet and U.S. Fleet Forces Command, and Naval Sea Systems Command. The five programs budgeted by MSC through the NWCF are: 1) Combat Logistics Force which provides support using civilian mariner manned non-combatant ships for underway material support to Carrier Strike Groups, Expeditionary Strike Groups and independently deployed units around the globe; 2) Service Support which provides civilian mariner manned non-combatant ships with towing, rescue and salvage, submarine support and cable laying and repair services, as well as a command and control platform and floating medical facilities; 3) Special Mission Ships which provide unique seagoing contract-operated platforms in the areas of oceanographic and hydrographic surveys, underwater surveillance, missile tracking, acoustic surveys, and submarine and special warfare support and contracted harbor tugs; 4) Afloat Prepositioning Force Navy which deploys advance material for strategic lift in support of the Marine Expeditionary Forces; and 5) Expeditionary Fast Transport which is a cooperative effort for a high-speed, shallow draft vessel intended for rapid intra-theater transport of medium sized cargo payloads.

Research and Development

Research and Development (R&D) includes the Warfare Centers and the Naval Research Laboratory. The R&D activities are intrinsically involved in the development, engineering, acquisition, and in-service support of weapons systems and equipment for the air, land, sea, and space operating environments. These efforts are key to the success of DON and DoD operations now and in the future. The R&D activities make major contributions in battle-space awareness, net-centric operations (connectivity and interoperability), cyber warfighting capability, and command and control. Their contributions are evident through research, engineering, and testing efforts in the fields of space, aerial, surface, and sub-surface sensors, communications systems, multi-media data fusion, and battle management systems. The R&D activities are continuously innovating and implementing improvements focused on delivering additional and more lethal capability.

The R&D activities also provide specialized support logistics through the repair and maintenance of select items of operating forces weapons and equipment. This unique capability is leveraged when work is limited in scope, irregular in schedule and/or very specialized and, therefore, insufficient to warrant fully dedicated depot facilities or commercial source interests. Continued success by our Warfare Centers and Laboratories is vital to maintaining and improving upon the mission capabilities of the operating forces that sustain our global presence.

- Space and Naval Warfare System Center (SPAWAR) is the Navy acquisition command that develops, delivers and sustains communications and information warfare capabilities for warfighters, keeping them securely connected anytime, anywhere and rapidly delivers cyber warfighting capability from seabed to space.
- Naval Air Warfare Center (NAWC) provides R&D, engineering, test and evaluation of all Navy and Marine Corps aircraft, aircraft systems, weapons and weapon systems.
- Naval Surface Warfare Center (NSWC) cohesively and seamlessly operates the Navy's full spectrum research, development, test and evaluation, engineering, and fleet support centers for offensive and defensive systems associated with surface warfare and related areas of joint, homeland, and national defense systems from the sea.

- Naval Undersea Warfare Center (NUWC) operate the Navy's full-spectrum research, development, test and evaluation, engineering, and Fleet support center for submarines, autonomous underwater systems, and offensive and defensive weapon systems associated with USW and related areas of homeland security and national defense.
- Naval Research Laboratory (NRL) operates as the Navy's full-spectrum corporate laboratory, conducting a broadly based multidisciplinary program of scientific research and advanced technological development directed toward maritime applications of new and improved materials, techniques, equipment, systems and ocean, atmospheric, and space sciences and related technologies.
- Naval Facilities Engineering and Expeditionary Warfare Center (EXWC) operates Navy's research, development, and test and evaluation for support combatant capabilities and sustainable facilities through specialized engineering, technology development, and lifecycle logistics services.

Base Support

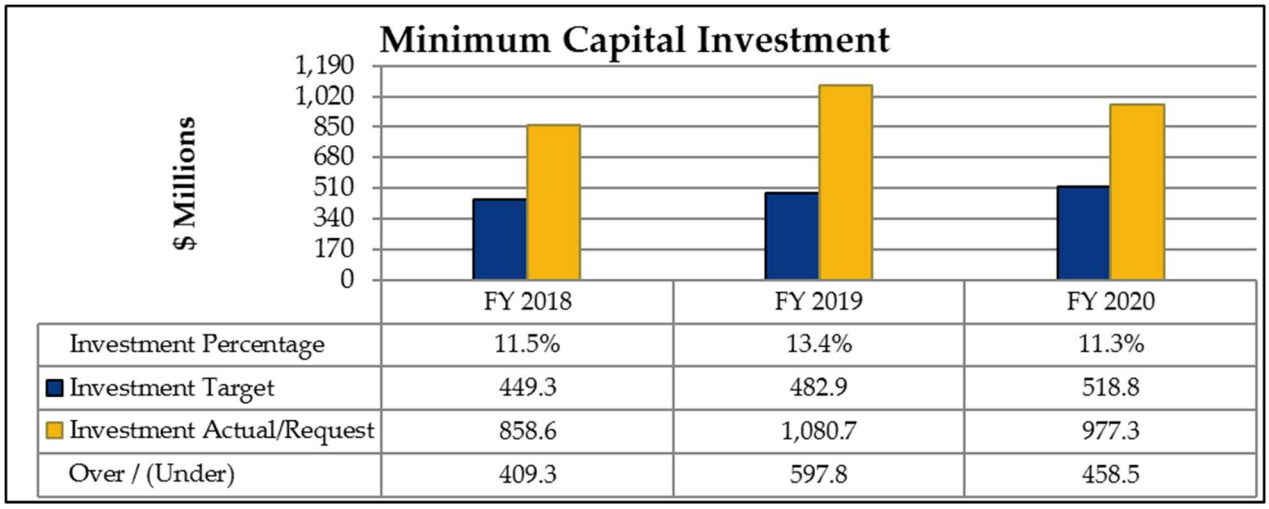
Effective FY 2020, the Base Support business area will be removed from the NWCF. The Base Support business area was comprised of the Facilities Engineering Commands (FECs) and the NWCF portion of Naval Facilities Engineering and Expeditionary Warfare Center (EXWC). When aligned to mission funding, the FECs will continue to provide a broad range of services by ensuring that DON and DoD facilities and installations have reliable access to utilities services such as electricity, water, steam, natural gas, vehicle and equipment services, facility support contracting oversight, and building/ facilities sustainment and recapitalization services.

Depot Maintenance Six Percent Capital Investment Plan:

10 USC 2476 mandates that each fiscal year, DON invest in the depot capital budgets (facilities and equipment) a minimum of 6% of the average total combined maintenance, repair, and overhaul workload funded for the previous three fiscal years. The 6% percent threshold mandated by 10 USC 2476 is applicable at the DON level, to include both NWCF (Fleet Readiness Centers and USMC Depots) and appropriated fund (Shipyards) activities.

The FY 2020 request reflects the DON's continued commitment to sustain and recapitalize Depot Maintenance infrastructure and to maintain a relevant industrial base. The FY 2020 request exceeds the 6% requirement by $458.5 million as shipyards continue to make strategic investments in their infrastructure to better serve their customers. Figure 2 reflects the DON's capital investment in depots.

Figure 2 - Depot Capital Investment



	FY 2018	FY 2019	FY 2020
Investment Percentage	11.5%	13.4%	11.3%
Investment Target	449.3	482.9	518.8
Investment Actual/Request	858.6	1,080.7	977.3
Over / (Under)	409.3	597.8	458.5

Financial Summary Tables:

New Orders: New orders are based on workload estimates coordinated with customers and historical trend analysis.

(Dollars in Millions)	FY 2018	FY 2019	FY 2020
New Orders			
Supply - Navy	7,560.5	7,394.3	8,159.4
Supply - Marine Corps	115.9	117.5	121.8
Depot Maintenance - Aircraft	2,746.6	2,488.0	2,352.3
Depot Maintenance - Marine Corps	379.2	425.9	353.0
R&D - Air Warfare Center	5,118.3	5,036.8	5,088.1
R&D - Surface Warfare Center	4,504.2	4,640.9	4,675.1
R&D - Undersea Warfare Center	1,206.6	1,273.7	1,242.7
R&D - SPAWAR Systems Center	2,406.8	2,591.0	2,612.8
R&D - Naval Research Laboratory	1,000.2	900.3	939.6
R&D - EXWC	N/A	N/A	87.6
Transportation - MSC	2,873.3	2,866.8	3,570.5
Base Support - FECs	2,964.3	2,992.6	N/A
Base Support - EXWC	92.0	76.7	N/A
Total	**30,967.9**	**30,804.5**	**29,203.1**

Revenue: Reflects the income generated from sale of goods or services, or any other use of capital or assets, associated with the main operations before any costs or expenses are deducted.

(Dollars in Millions)	FY 2018	FY 2019	FY 2020
Revenue			
Supply - Navy	7,184.3	7,711.5	7,909.0
Supply - Marine Corps	106.4	121.8	115.8
Depot Maintenance - Aircraft	2,527.1	2,581.0	2,417.7
Depot Maintenance - Marine Corps	360.1	433.0	385.9
R&D - Air Warfare Center	4,920.1	5,002.4	5,055.3
R&D - Surface Warfare Center	4,425.2	4,640.9	4,675.1
R&D - Undersea Warfare Center	1,191.2	1,267.2	1,248.4
R&D - SPAWAR Systems Center	2,307.8	2,557.2	2,612.7
R&D - Naval Research Laboratory	946.0	935.0	996.2
R&D - EXWC	N/A	N/A	86.9
Transportation - MSC	2,727.2	2,866.8	3,570.5
Base Support - FECs	3,022.4	2,915.3	165.6
Base Support - EXWC	87.7	77.3	N/A
Total	**29,805.4**	**31,109.4**	**29,239.1**

Operating Costs: Total operating obligations for supply functions and cost of goods and services sold for industrial functions are as follows:

(Dollars in Millions)	FY 2018	FY 2019	FY 2020
Operating Costs			
Supply - Navy (Obligations)	9,018.4	9,213.8	8,304.1
Supply - Marine Corps (Obligations)	70.7	108.7	108.5
Depot Maintenance - Aircraft	2,468.7	2,367.9	2,395.6
Depot Maintenance - Marine Corps	354.3	422.1	411.4
R&D - Air Warfare Center	4,926.2	5,015.6	5,042.7
R&D - Surface Warfare Center	4,425.9	4,669.0	4,745.9
R&D - Undersea Warfare Center	1,174.7	1,263.9	1,272.5
R&D - SPAWAR Systems Center	2,304.7	2,562.1	2,600.2
R&D - Naval Research Laboratory	964.7	958.5	982.7
R&D - EXWC	N/A	N/A	83.5
Transportation - MSC	3,045.3	2,934.7	3,314.3
Base Support - FECs	3,083.0	3,083.2	165.9
Base Support - EXWC	86.5	81.9	N/A
Total	**31,923.0**	**32,681.5**	**29,427.4**

Net Operating Results: Revenue, excluding surcharge collections and extraordinary expenses, less the cost of goods and services sold to customers is as follows:

(Dollars in Millions)	FY 2018	FY 2019	FY 2020
Net Operating Results			
Supply - Navy	144.0	(186.6)	(21.7)
Supply - Marine Corps	(4.9)	0.2	(3.9)
Depot Maintenance - Aircraft	57.9	213.1	22.1
Depot Maintenance - Marine Corps	5.8	1.9	(25.5)
R&D - Air Warfare Center	(6.2)	(22.3)	12.6
R&D - Surface Warfare Center	(3.1)	(42.7)	(70.8)
R&D - Undersea Warfare Center	15.6	(1.8)	(29.1)
R&D - SPAWAR Systems Center	(8.4)	(14.6)	0.4
R&D - Naval Research Laboratory	(19.7)	(23.5)	13.5
R&D - EXWC	N/A	N/A	3.4
Transportation - MSC	(318.1)	(68.0)	256.3
Base Support - FECs	(60.5)	(176.1)	(0.3)
Base Support - EXWC	1.2	(4.6)	N/A
Total	**(196.5)**	**(325.0)**	**157.0**

Accumulated Operating Results: Reflects the cumulative summation of Net Operating Results carried from fiscal year to fiscal year, since inception, and is as follows:

(Dollars in Millions)	FY 2018	FY 2019	FY 2020
Accumulated Operating Results			
Supply - Navy	208.2	21.7	0.0
Supply - Marine Corps	(0.9)	9.8	0.0
Depot Maintenance - Aircraft	(235.2)	(22.1)	0.0
Depot Maintenance - Marine Corps	23.6	25.5	0.0
R&D - Air Warfare Center	9.7	(12.6)	0.0
R&D - Surface Warfare Center	113.6	70.8	0.0
R&D - Undersea Warfare Center	30.9	29.1	0.0
R&D - SPAWAR Systems Center	14.2	(0.4)	0.0
R&D - Naval Research Laboratory	9.9	(13.5)	0.0
R&D - EXWC	N/A	N/A	0.0
Transportation - MSC	(138.3)	(206.3)	0.0
Base Support - FECs	298.8	122.7	N/A
Base Support - EXWC	1.2	(3.4)	N/A
Total	**335.6**	**21.3**	**0.0**

Workload: Projections for workload are consistent with Navy force structure, support levels, and customer funding. The table below displays year-to-year percentage changes. Changes are indicated by gross sales for supply, per diem (ship days) for transportation, program costs for base support, and direct labor hours for all others.

(Percent Change)	FY 2019	FY 2020
Workload		
Supply - Navy	7.4%	5.8%
Supply - Marine Corps	14.6%	0.0%
Depot Maintenance - Aircraft	5.0%	0.8%
Depot Maintenance - Marine Corps	3.9%	-2.3%
R&D - Air Warfare Center	4.1%	1.5%
R&D - Surface Warfare Center	-0.6%	-0.1%
R&D - Undersea Warfare Center	1.4%	0.2%
R&D - SPAWAR Systems Center	3.2%	1.1%
R&D - Naval Research Laboratory	0.8%	0.4%
R&D - EXWC	N/A	0.6%
Transportation - MSC	3.1%	2.3%
Base Support - FECs	0.0%	N/A
Base Support - EXWC	-1.7%	N/A
Total	**2.7%**	**-1.0%**

NWCF Cash:

Definition of Cash: The Defense Working Capital Fund (DWCF) Fund Balance with Treasury, treasury account symbol 97X4930, is subdivided into five sub-numbered accounts. The Navy's account is 97X4930.002. The balance in this account is defined as cash balance which equals the amount at the beginning of the fiscal year plus the cumulative fiscal year-to-date amounts of collections, appropriations, and transfers-in minus the cumulative fiscal year-to-date amounts of disbursements, withdrawals, and transfers-out.

Cash Management Principles in Working Capital Funds: Unlike appropriated funds, the NWCF Fund Balance with Treasury is not equal to outstanding obligations. Cash on hand at Treasury must be sufficient to pay bills when due and should remain sufficient to support operational requirements, near term capital investment program disbursements, and any cost fluctuations and unplanned expenses due to customer demand changes. More specifically, the NWCF needs to have cash to:

- Support regular operational requirements including payments for supplies, labor, utilities, etc;
- Cover costs not covered by stabilized rates due to commodity market cost increase, unexpectedly increased inflation, or other factors;
- Increase inventory investments to respond to customer demand changes;
- Pay overhead and fixed costs when actual workload is less than budgeted workload as these costs are allocated to workload levels estimated in the budget;
- Cover cyclical or seasonal patterns in cash disbursements and collections, as cash levels of certain business activities will typically be lower at specific times of the year such as the holiday season when depots often operate on a reduced work schedules;
- Cover budgeted cash losses when returning prior year gains by providing goods or services below cost to customers;
- Ensure funds are available to cover increases in payables that occur when multiple bills arrive earlier than expected, or decreases in collections because of other cash flow issues such as a third pay date within a given month.

The cash balance is primarily affected by cash generated from operations, but is also impacted by appropriations, transfers, and withdrawals. Maintaining a proper cash balance is dependent on setting rates to recover full costs, including prior year gains and losses, and accurately projecting workload. Cost volatility and unexpected changes in customer orders are the prime concerns causing deviations from budget projections.

NWCF Cash Management: The DON's goal is to maintain the NWCF cash balance within the upper and lower operational range. The operational range is determined using the established DoD guidance for calculating cash requirements. Specifically, these are rate, range, risk mitigation, and reserves. The DON's NWCF cash requirement includes a forecast of collections and disbursements and considers cyclical timing of outlays. Cash requirements must also account for the greatest time between collections and disbursements to ensure auditability and accurate daily cash balances. Protecting customer programs by preserving their buying power in the year of execution to the levels of the original budget is a primary benefit of the NWCF. This benefit, however, can only be realized when sufficient cash balances are maintained throughout each cycle to absorb the impact of cost volatility and any unanticipated changes in customer workload. For FY 2020 the DON NWCF budget includes a cash surcharge for the Military Sealift Command in the amount of $50 million. This surcharge is only applicable to Navy-owned ships and this infusion will position NWCF cash within the operational range. This action effectively mitigates the need for execution year adjustments. The decreasing upper operational range, as depicted below, is primarily due to the removal of the FECs from the NWCF and realignment to mission funding.

(Dollars in Millions)	**FY 2018**	**FY 2019**	**FY 2020**
Treasury Cash			
Beginning Cash Balance	**2,270.7**	**2,513.6**	**1,937.9**
Collections	29,848.1	30,960.0	29,224.0
Disbursements	29,633.7	31,584.1	29,838.3
Consumable Item Transfer	28.6	48.4	3.8
Ending Cash Balance	**2,513.6**	**1,937.9**	**1,327.5**
Upper Operational Range	**2,900.0**	**2,600.0**	**2,200.0**
Lower Operational Range	**1,236.0**	**1,294.0**	**1,240.0**

Customer Rate Changes: Approved composite rate changes from FY 2017 to FY 2018 and from FY 2018 to FY 2019 are displayed below. Composite rate changes from FY 2019 to FY 2020, designed to achieve an Accumulated Operating Result of zero, are also displayed as follows:

(Percent Change)	**FY 2018**	**FY 2019**	**FY 2020**
Customer Rate Change			
Supply			
Navy - Aviation Consumables	-1.23%	-11.68%	-1.64%
Navy - Shipboard Consumables	-0.29%	1.12%	4.54%
Navy - Aviation Repairables	0.37%	-0.25%	1.59%
Navy - Shipboard Repairables	1.10%	1.12%	4.54%
MARCORPS Consumables/Repairables	-2.25%	-9.46%	-8.10%
Depot Maintenance - Aircraft	-10.29%	7.37%	-1.05%
Depot Maintenance - Marine Corps	-0.85%	8.07%	-2.17%
R&D - Air Warfare Center	2.66%	0.89%	2.25%
R&D - Surface Warfare Center	1.43%	0.82%	1.63%
R&D - Undersea Warfare Center	3.80%	1.48%	-0.14%
R&D - SPAWAR Systems Center	3.78%	0.95%	1.77%
R&D - Naval Research Laboratory	4.75%	0.06%	7.39%
R&D - EXWC	N/A	N/A	12.32%
Transportation - MSC			
Combat Logistics Force	-4.50%	6.60%	11.90%
Special Mission Ships	-28.40%	31.50%	30.40%
Afloat Prepositioning Ships	-36.50%	-1.50%	60.30%
Service Support Ships	-25.80%	2.20%	24.00%
Expeditionary Fast Transport	N/A	N/A	N/A
Base Support - FECs			
East Coast Utilities	-7.24%	1.52%	2.00%
East Coast - Other	5.34%	-3.43%	2.00%
West Coast Utilities	3.40%	-5.05%	2.00%
West Coast - Other	4.80%	-0.73%	2.00%
Base Support - EXWC	-1.50%	-7.42%	N/A

Unit Cost: Unit Cost is the method established to authorize and control costs. Unit cost goals allow activities to respond to workload changes in execution by encouraging reduced costs when workload declines and allowing appropriate increases in costs when their customers request additional services.

	FY 2018	FY 2019	FY 2020
Unit Cost			
Supply - Navy (cost per unit of sales[1]):			
Wholesale	$1.291	$1.221	$1.055
Retail	$1.004	$1.001	$1.001
Supply - Marine Corps (cost per unit of sales[1]):			
Wholesale	$0.698	$0.895	$0.894
Retail	-$0.561	$0.018	$0.019
Depot Maintenance - Aircraft ($/Direct Labor Hour)	$226.61	$206.93	$207.69
Depot Maintenance - Marine Corps ($/Direct Labor Hour)	$130.86	$150.09	$149.76
R&D - Air Warfare Center ($/Direct Labor Hour[2])	$107.39	$113.70	$115.58
R&D - Surface Warfare Center ($/Direct Labor Hour[2])	$109.22	$110.01	$109.75
R&D - Undersea Warfare Center ($/Direct Labor Hour[2])	$105.87	$108.99	$107.95
R&D - SPAWAR Systems Center ($/Direct Labor Hour[2])	$116.48	$114.94	$115.25
R&D - Naval Research Laboratory ($/Direct Labor Hour[2])	$162.94	$163.09	$167.14
R&D - EXWC ($/direct Labor Hour[2])	N/A	N/A	$114.64
Transportation - MSC			
Combat Logistics Force ($/day)	$132,233	$126,120	$134,565
Special Mission Ships ($/day)	$42,627	$49,561	$51,930
Afloat Prepositioning Ships ($/day)	$67,666	$71,487	$91,086
Service Support Ships ($/day)	$73,145	$62,558	$71,797
Expeditionary Fast Transport	N/A	N/A	N/A
Base Support - FECs Cost of Services	Various	Various	Various
Base Support - EXWC ($/direct Labor Hour[2])	$120.79	$116.51	N/A

[1] *excludes inventory augmentation and war reserve material obligations*

[2] *includes direct labor plus overhead costs*

Staffing: Total civilian and military personnel employed at NWCF activities are displayed in the following tables.

(Strength in Whole Numbers)	**FY 2018**	**FY 2019**	**FY 2020**
Civilian End Strength			
Supply - Navy	6,912	7,197	5,303
Supply - Marine Corps	26	26	26
Depot Maintenance - Aircraft	11,362	10,514	10,626
Depot Maintenance - Marine Corps	1,421	1,448	1,423
R&D - Air Warfare Center	16,785	16,644	16,644
R&D - Surface Warfare Center	20,013	19,830	19,830
R&D - Undersea Warfare Center	5,590	5,593	5,593
R&D - SPAWAR Systems Center	8,987	9,002	9,002
R&D - Naval Research Laboratory	2,598	2,570	2,570
R&D - EXWC	N/A	N/A	408
Transportation - MSC	6,653	6,675	6,840
Base Support - FECs	9,827	9,625	N/A
Base Support - EXWC	422	408	N/A
Total	**90,596**	**89,532**	**78,265**

(Workyears in Whole Numbers)	**FY 2018**	**FY 2019**	**FY 2020**
Civilian Workyears			
Supply - Navy	6,789	7,192	5,297
Supply - Marine Corps	20	24	24
Depot Maintenance - Aircraft	10,437	10,330	10,330
Depot Maintenance - Marine Corps	1,360	1,446	1,438
R&D - Air Warfare Center	15,807	16,218	16,356
R&D - Surface Warfare Center	19,076	19,135	19,135
R&D - Undersea Warfare Center	5,397	5,480	5,480
R&D - SPAWAR Systems Center	8,623	8,829	8,861
R&D - Naval Research Laboratory	2,531	2,515	2,515
R&D - EXWC	N/A	N/A	405
Transportation - MSC	8,976	8,662	8,738
Base Support - FECs	9,545	9,472	N/A
Base Support - EXWC	409	405	N/A
Total	**88,970**	**89,708**	**78,579**

(Strength in Whole Numbers)	FY 2018	FY 2019	FY 2020
Military End Strength			
Supply - Navy	364	364	364
Supply - Marine Corps	0	0	0
Depot Maintenance - Aircraft	129	130	130
Depot Maintenance - Marine Corps	11	11	11
R&D - Air Warfare Center	219	187	195
R&D - Surface Warfare Center	172	168	171
R&D - Undersea Warfare Center	35	44	44
R&D - SPAWAR Systems Center	81	77	77
R&D - Naval Research Laboratory	70	60	61
R&D - EXWC	N/A	N/A	3
Transportation - MSC	161	165	165
Base Support - FECs	80	78	N/A
Base Support - EXWC	3	3	N/A
Total	**1,325**	**1,287**	**1,221**

(Workyears in Whole Numbers)	FY 2018	FY 2019	FY 2020
Military Workyears			
Supply - Navy	364	364	364
Supply - Marine Corps	0	0	0
Depot Maintenance - Aircraft	129	130	130
Depot Maintenance - Marine Corps	11	11	11
R&D - Air Warfare Center	164	159	168
R&D - Surface Warfare Center	176	169	172
R&D - Undersea Warfare Center	18	32	32
R&D - SPAWAR Systems Center	67	77	77
R&D - Naval Research Laboratory	64	60	61
R&D - EXWC	N/A	N/A	3
Transportation - MSC	161	165	165
Base Support - FECs	46	78	N/A
Base Support - EXWC	3	3	N/A
Total	**1,203**	**1,248**	**1,183**

Capital Investment Program (CIP): The Capital Investment Program (CIP) within the NWCF provides for the reinvestment in the infrastructure of NWCF business areas to improve product and service quality and timeliness, reduce costs, and foster state-of-the-art business operations. The CIP is used to purchase new or replace older, wornout or obsolete equipment, including: Automated Data Processing Equipment (ADPE); non-ADPE equipment; Automated Data Processing Software, whether internally or externally developed. In addition, the CIP program provides funding for Minor Construction projects. The capital budget justifies the purchase of assets that have a useful life of two or more years and have a unit cost of not less than $0.5 million for procurements by a major range and test facility installation or a science and technology reinvention laboratory (STRL) and not less than $0.25 million for procurements at all other facilities.

The table below shows a summary of the NWCF CIP budget. The decrease from FY 2019 to FY 2020 is primarily due to the removal of the FECs from the NWCF and realignment to mission funding.

(Dollars in Millions)	**FY 2018**	**FY 2019**	**FY 2020**	**Chg FY 19/20**
Capital Investment Program				
Supply - Navy	6.8	8.3	8.3	0.0
Supply - Marine Corps	0.0	0.0	0.0	0.0
Depot Maintenance - Aircraft	42.1	43.4	41.3	(2.2)
Depot Maintenance - Marine Corps	5.4	10.2	8.5	(1.8)
R&D - Air Warfare Center	52.9	57.4	48.4	(9.1)
R&D - Surface Warfare Center	58.3	57.4	53.5	(3.8)
R&D - Undersea Warfare Center	20.3	26.7	26.4	(0.3)
R&D - SPAWAR Systems Center	21.5	17.5	19.3	1.8
R&D - Naval Research Laboratory	27.0	23.5	25.7	2.2
R&D - EXWC	N/A	N/A	0.0	0.0
Transportation - MSC	8.1	5.4	4.9	(0.5)
Base Support - FECs	15.1	23.2	N/A	(23.2)
Base Support - EXWC	0.0	1.4	N/A	(1.4)
Total	**257.5**	**274.4**	**236.2**	**(38.2)**

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1. Fleet Readiness Centers

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NARRATIVE
DEPARTMENT OF THE NAVY
DEPOT MAINTENANCE – FLEET READINESS
CENTERS FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Mission Statement / Overview:

The Fleet Readiness Centers (FRCs) provide responsive worldwide maintenance, engineering, and logistics support. The FRCs ensure a core industrial resource base essential for mobilization, repair of aircraft, engines, and components, and manufacture of parts and assemblies. The FRCs provide engineering services in the development of hardware design changes, and furnish technical and professional services on maintenance and logistics problems. Completed work ensures deployed and next-to-deploy units have the battle-ready items needed to train, fight, and win today while supporting the force to win tomorrow.

Activity Group Composition:

Activities	Location
FRC, East	Cherry Point, NC
FRC, Southeast	Jacksonville, FL
FRC, Southwest	San Diego, CA

Significant Changes Since the FY 2019 President's Budget:

The budget estimate for FY 2020 reflects changes from the President's Budget submission to account for changes to Net Operating Results (NOR) projections result from including workyears in support of increasing throughput, Component work and anticipated labor attrition. Currently, FRCs are experiencing losses from prior year component work due to parts long lead times and carryover workload.

Financial Profile:

Orders/Revenue/Expense/Operating Results ($Millions):	FY 2018	FY 2019	FY 2020
Orders	$2,746.6	$2,488.0	$2,352.3
Revenue	$2,527.1	$2,581.0	$2,417.7
Expense	$2,468.7	$2,367.9	$2,395.6
Operating Results	$58.4	$213.1	$22.1
Capital Surcharge	($0.5)	$0.0	$0.0
Net Operating Results (NOR)	$57.9	$213.1	$22.1
Prior Year AOR	($290.6)	($235.2)	($22.1)
Other Changes Affecting AOR	($2.5)	$0.0	$0.0
Accumulated Operating Results (AOR)	($235.2)	($22.1)	$0.0

Some totals may not add due to rounding.

NARRATIVE
DEPARTMENT OF THE NAVY
DEPOT MAINTENANCE – FLEET READINESS
CENTERS FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Orders, Revenue, and Expense: FY 2020 reflects updated pricing and workload assumptions.

Orders – New reimbursable orders were unusually high in FY 2018 due to prior year recoveries, increased equipment maintenance and Organizational Level maintenance. FY 2019 reflects increases related to orders in Airframes (FA-18, H-60, C-2, H-1). FY 2020 decreases reflects AOR recoupment and changes in Airframes (decreased orders for FA-18, H-60, C-2) workload. Component workload has increased due to anticipated increased fleet demand.

Revenue – Revenue is consistent with updated estimates of new Reimbursable Orders and Direct Labor Hour projections, as well as recoupment of prior year AOR.

Expense (Cost of Goods & Services Sold) – Remains stable with a minimal increase in FY 2020. FY 2020 includes expenses related to additional workyears for associated customer workload.

Collections/Disbursements/Outlays ($Millions):	FY 2018	FY 2019	FY 2020
Collections	$2,449.6	$2,567.9	$2,412.0
Disbursements	$2,479.8	$2,358.1	$2,377.8
Outlays	$30.2	($209.8)	($34.1)

Some totals may not add due to rounding.

Current Net Outlay projections reflect workload changes and updated operating estimates.

Workload:

Direct Labor Hours (000):	FY 2018	FY 2019	FY 2020
Current Estimate	10,894	11,443	11,534

Direct Labor Hours (DLHs): Rates are based on DLHs required for stabilized workload. Direct labor hours increase in FY 2019 and FY 2020 in the Product Support (Production Related Logistics/Engineering) and Components programs.

Performance Indicators: The primary performance indicator is unit cost, which represents the average cost of delivering goods and services to our customers.

NARRATIVE
DEPARTMENT OF THE NAVY
DEPOT MAINTENANCE – FLEET READINESS
CENTERS FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Unit Cost:	**FY 2018**	**FY 2019**	**FY 2020**
Total Stabilized Cost ($Millions)	$2,468.7	$2,367.9	$2,395.6
Workload (DLHs) (000)	10,894	11,443	11,534
Unit cost (per DLH)	$226.61	$206.93	$207.69

Unit Cost is the method established to authorize and control costs. Unit cost goals allow activities to respond to workload changes in execution by encouraging reduced costs when workload declines and allowing appropriate increases in costs when customers request additional services.

Stabilized / Composite Rates:	**FY 2018**	**FY 2019**	**FY 2020**
Stabilized Rate	$212.20	$227.83	$225.43
Change from Prior Year		$15.63	($2.40)
Composite Rate Change		7.37%	-1.05%

Rates are based on DLHs required for anticipated workload. Customers are charged a predetermined rate per direct employee hour worked. The rate consists of direct and indirect labor and applied overhead. Unique direct non-labor costs are billed on a reimbursable basis to the customer. The FY 2020 composite hourly rate reflects a decrease of $2.40 from FY 2019, which includes recoupment of losses of ($3.05) and additional direct and indirect expenses necessary to support throughput.

Summary of Workload Indicators:	**Inducted Units**			**Completed Units**		
	FY 2018	**FY 2019**	**FY 2020**	**FY 2018**	**FY 2019**	**FY 2020**
AIRFRAMES	**417**	**452**	**406**	**397**	**458**	**420**
O&M,N	377	426	384	355	415	390
O&M,NR	16	5	8	19	18	15
RDT&E	6	8	3	6	6	3
Other	18	13	11	17	19	12
ENGINES	**1,917**	**1,618**	**1,941**	**1,535**	**1,573**	**2,038**
O&M,N	1,840	1,557	1,872	1,458	1,511	1,950
O&M,NR	29	12	18	21	12	17
RDT&E	9	13	13	9	9	14
Other	39	36	38	47	41	57
COMPONENTS						
Working Capital Fund (NSF (7R))	38,554	48,116	48,116	32,771	40,898	40,898

NARRATIVE
DEPARTMENT OF THE NAVY
DEPOT MAINTENANCE – FLEET READINESS
CENTERS FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Staffing:

Civilian/Military ES & Workyears:	**FY 2018**	**FY 2019**	**FY 2020**
Civilian End Strength	11,362	10,514	10,626
Civilian Workyears (straight time)	10,437	10,330	10,330
Military End Strength	129	130	130
Military Workyears	129	130	130

Civilian Personnel: Civilian personnel staffing is sized to meet anticipated workload from customers, as well as accounting for attrition each fiscal year. Current projections reflect increases from the FY 2019 President's Budget for FY 2018 and FY 2019.

Military Personnel: The military personnel profile remains stable through the budget years.

Capital Investment Program (CIP) Authority ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Equipment, Non-ADP / Telecom	$30.3	$35.2	$35.7
Equipment, ADPE / Telecom	$5.0	$2.0	$0.0
Software Development	$0.0	$0.0	$0.0
Minor Construction	$6.8	$6.2	$5.5
Total	$42.1	$43.4	$41.3

Some totals may not add due to rounding.

The Capital Investment Program assists the FRCs in achieving their mission by reinvesting in plant equipment and facilities. Included in the capital budget are the following types of assets: automated data processing equipment (ADPE); non-ADPE equipment; automated data processing software, internally or externally developed; and minor construction.

Carryover Compliance (Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Net Carry-In	$988.6	$1,208.1	$1,115.0
Allowable Carryover	$1,065.3	$980.8	$964.7
Calculated Actual Carryover	$1,058.8	$980.8	$920.3
Delta (Actual-Allowable): Above Ceiling (+)/Below Ceiling (-)	($6.6)	($0.1)	($44.4)

Some totals may not add due to rounding.

Carryover was slightly over the allowable ceiling in FY 2018. A carryover waiver in the amount of $16.5 million for crash damaged aircraft was requested and approved.

REVENUE AND EXPENSES
DEPARTMENT OF THE NAVY
DEPOT MAINTENANCE - FLEET READINESS CENTERS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH **2019**
(DOLLARS IN MILLIONS)

	FY 2018	FY 2019	FY 2020
Revenue:			
Gross Sales			
Operations	2,496.7	2,538.4	2,376.4
Capital Surcharges	0.5	0.0	0.0
Capital Investment Recovery	29.9	42.6	41.3
Other Income			
Total Income	2,527.1	2,581.0	2,417.7
Expenses			
Cost of Materiel Sold from Inventory			
Salaries and Wages:			
Military Personnel Compensation & Benefits	10.9	11.2	11.4
Civilian Personnel Compensation & Benefits	1,071.6	1,067.0	1,072.5
Travel and Transportation of Personnel	20.6	16.5	15.7
Material & Supplies (Internal Operations)	576.6	611.1	636.5
Equipment	314.6	296.2	290.9
Other Purchases from NWCF	23.3	17.2	17.2
Transportation of Things	3.5	3.6	3.8
Capital Investment Recovery	29.9	42.6	41.3
Printing and Reproduction	0.9	0.6	0.6
Advisory and Assistance Services	0.8	0.0	0.0
Rent, Communication, Utilities & Misc Charges	55.6	37.7	38.5
Other Purchased Services	363.1	266.3	268.3
Total Expenses	2,471.3	2,369.9	2,396.6
Work in Process Adjustment	-2.5	-2.1	-1.0
Comp Work for Activity Retention Adjustment	-0.1	0.0	0.0
Cost of Goods Sold	2,468.7	2,367.9	2,395.6
Operating Result	58.4	213.1	22.1
Adjustments Affecting NOR	-0.5	0.0	0.0
Capital Surcharges	-0.5	0.0	0.0
Extraordinary Expenses Unmatched	0.0	0.0	0.0
Other Changes Affecting NOR (All Others)	0.0	0.0	0.0
Net Operating Result	57.9	213.1	22.1
PY AOR	-290.6	-235.2	-22.1
TOTAL AOR	-232.7	-22.1	0.0
Non-Recoverable Adjustments impacting AOR	-2.5	0.0	0.0
AOR for budget purposes	-235.2	-22.1	0.0

SOURCES OF NEW ORDERS & REVENUE
DEPARTMENT OF THE NAVY
DEPOT MAINTENANCE - FLEET READINESS CENTERS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH **2019**
(DOLLARS IN MILLIONS)

	FY 2018	FY 2019	FY 2020
1. New Orders	2,746.6	2,488.0	2,352.3
a. Orders from DoD Components:	1,855.2	1,607.7	1,533.1
Department of the Navy	1,762.9	1,524.8	1,454.1
O & M, Navy	1,485.5	1,204.0	1,144.6
O & M, Marine Corps	4.3	5.3	5.7
O & M, Navy Reserve	29.1	32.5	28.1
O & M, Marine Corp Reserve	0.0	0.0	0.0
Aircraft Procurement, Navy	206.8	249.0	244.3
Weapons Procurement, Navy	0.0	0.0	0.0
Ammunition Procurement, Navy/MC	1.2	1.5	1.4
Shipbuilding & Conversion, Navy	3.4	3.7	7.6
Other Procurement, Navy	5.1	3.2	2.9
Procurement, Marine Corps	0.6	0.0	0.0
Family Housing, Navy/MC	0.0	0.0	0.0
Research, Dev., Test, & Eval., Navy	26.8	25.6	19.5
Military Construction, Navy	0.0	0.0	0.0
National Defense Sealift Fund	0.0	0.0	0.0
Other Navy Appropriations	0.0	0.0	0.0
Other Marine Corps Appropriations	0.0	0.0	0.0
Department of the Army	4.4	3.3	2.7
Army Operation & Maintenance	2.4	1.3	1.0
Army Res, Dev, Test, Eval	0.3	0.1	0.1
Army Procurement	1.8	1.8	1.6
Army Other	0.0	0.0	0.0
Department of the Air Force	84.8	79.6	76.2
Air Force Operation & Maintenance	81.0	71.6	68.4
Air Force Res, Dev, Test, Eval	0.2	0.0	0.0
Air Force Procurement	4.0	8.0	7.8
Air Force Other	0.0	0.0	0.0
DOD Appropriation Accounts	3.1	0.1	0.1
Base Closure & Realignment	0.0	0.0	0.0
Operation & Maintenance Accounts	3.0	0.0	0.1
Res, Dev, Test & Eval Accounts	0.0	0.1	0.1
Procurement Accounts	0.2	0.0	0.0
Defense Emergency Relief Fund	0.0	0.0	0.0
DOD Other	0.0	0.0	0.0
b. Orders from other Fund Activity Groups	745.1	739.7	689.7
c. Total DoD	2,600.3	2,347.4	2,222.7
d. Other Orders:	146.3	140.6	129.6
Other Federal Agencies	1.2	2.9	4.6
Foreign Military Sales	50.1	40.7	31.6
Non Federal Agencies	95.0	97.0	93.4
2. Carry-In Orders	988.6	1,208.1	1,115.0
3. Total Gross Orders	3,735.2	3,696.1	3,467.3
a. Funded Carry-Over before Exclusions	1,208.1	1,115.0	1,049.7
4. Revenue(-)	2,527.1	2,581.0	2,417.7
5. End of Year Work-In-Process (-)	31.5	33.9	35.2
6. FMS, BRAC, Other Federal, Non-Federal orders, Inst. MRTFB (-), and waiver.	84.8	100.4	94.2
7. Funded Carryover	1,058.8	980.8	920.3

Note: Line 5 (End of Year Work-In-Process) is adjusted for Non-DOD BRAC, FMS, and Institutional MRTFB

CHANGES IN THE COSTS OF OPERATIONS
DEPARTMENT OF THE NAVY
DEPOT MAINTENANCE - FLEET READINESS CENTERS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH **2019**
(DOLLARS IN MILLIONS)

	Costs
FY 2018 Actuals	**2,468.7**
FY 2019 President's Budget:	**2,290.7**
Estimated Impact in FY 2019 of Actual FY 2018 Experience:	**0.0**
Pricing Adjustments:	**1.3**
Fuel Price Changes	0.7
General Purchase Inflation	0.7
Program Changes:	**60.7**
Airframes work	1.9
Engines work *(F414)*	-26.3
Components work *(NSF)*	39.1
Other Support work	-3.2
Modification work	-6.4
Product Support work	55.7
Other Changes:	**15.2**
Capital Investment Recovery	-1.0
Facilities Sustainment, Restoration & Modernization	14.3
Civilian Equivalency Rate Changes	-0.2
Change in Indirect Labor Cost	2.0
FY 2019 Current Estimate:	**2,367.9**
Pricing Adjustments:	**26.3**
Annualization of Prior Year Pay Raises	**0.1**
Civilian Personnel	0.0
Military Personnel	0.1
FY 2020 Pay Raise	**0.2**
Civilian Personnel	0.0
Military Personnel	0.2
Fuel Price Changes	0.6
General Purchase Inflation	25.4
Productivity Initiatives and Other Efficiencies:	**0.0**
Program Changes:	**11.4**
Airframes work *(FA-18 & P3)*	-20.6
Engines work *(F414)*	12.1
Components work *(NSF)*	-2.3
Other Support work	-6.5
Modification work	7.4
Product Support work	21.2
Other Changes:	**-10.0**
Capital Investment Recovery	-1.3
Facilities Sustainment, Restoration & Modernization	-1.4
General Materials & Supplies	-8.3
Change in work days	4.3
Change in Indirect Labor Cost	-3.3
FY 2020 Estimate:	**2,395.6**

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CAPITAL INVESTMENT SUMMARY
DEPARTMENT OF THE NAVY
DEPOT MAINTENANCE - FLEET READINESS CENTERS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

		FY 2018		FY 2019		FY 2020	
Line #	Description	Quantity	Total Cost	Quantity	Total Cost	Quantity	Total Cost
1	**Non-ADPE and Telecom Equipment >= $.250M**	**27**	**$30.303**	**17**	**$35.190**	**14**	**$35.730**
	- Vehicles	0	$0.000	0	$0.000	0	$0.000
	- Material Handling	0	$0.000	0	$0.000	0	$0.000
	- Installation Security	0	$0.000	0	$0.000	0	$0.000
	- Quality Control/Testing	7	$1.925	1	$2.000	4	$9.000
	- Medical Equipment	0	$0.000	0	$0.000	0	$0.000
	- Machinery	8	$15.819	2	$7.355	4	$13.620
	- Support Equipment	12	$12.559	14	$25.835	6	$13.110
2	**ADPE and Telecom Equipment >= $.250M**	**7**	**$4.993**	**1**	**$2.000**	**0**	**$0.000**
	- Computer Hardware (Production)	0	$0.000	0	$0.000	0	$0.000
	- Computer Hardware (Network)	5	$3.433	1	$2.000	0	$0.000
	- Computer Software (Operating)	1	$0.970	0	$0.000	0	$0.000
	- Telecommunications	1	$0.590	0	$0.000	0	$0.000
	- Other Support Equipment	0	$0.000	0	$0.000	0	$0.000
3	**Software Development >= $.250M**	**0**	**$0.000**	**0**	**$0.000**	**0**	**$0.000**
	- Internally Developed	0	$0.000	0	$0.000	0	$0.000
	- Externally Developed	0	$0.000	0	$0.000	0	$0.000
4	**Minor Construction (>= $.250M and <= $2.000M)**	**9**	**$6.802**	**5**	**$6.240**	**3**	**$5.541**
	- Replacement Capability	9	$6.802	4	$4.240	2	$3.541
	- New Construction	0	$0.000	1	$2.000	1	$2.000
	- Environmental Capability	0	$0.000	0	$0.000	0	$0.000
	Grand Total	**43**	**$42.098**	**23**	**$43.430**	**17**	**$41.271**
	Total Capital Outlays		**$41.323**		**$42.261**		**$39.199**
	Total Capital Investment Recovery		**$29.918**		**$42.605**		**$41.271**

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Department of the Navy/ Depot Maintenance	#001 - Non-ADPE						Fleet Readiness Centers		
	FY 2018			FY 2019			FY 2020		
Non-ADP Equipment	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Vehicles	0	-	$0	0	-	$0	0	-	$0
Material Handling	0	-	$0	0	-	$0	0	-	$0
Installation Security	0	-	$0	0	-	$0	0	-	$0
Quality Control/ Testing	7	275	$1,925	1	2,000	$2,000	4	2,250	$9,000
Medical Equipment	0	-	$0	0	-	$0	0	-	$0
Machinery	8	1,977	$15,819	2	3,678	$7,355	4	3,405	$13,620
Support Equipment	12	1,047	$12,559	14	1,845	$25,835	6	2,185	$13,110
Total	27	1,122	$30,303	17	2,070	$35,190	14	2,552	$35,730

Justification:

As the Department of the Navy's provider of depot level maintenance, repair, overhaul, & upgrades for aircraft, the Fleet Readiness Centers (FRCs) depend heavily on the acquisition of capital assets through the Capital Investment Program (CIP) to accomplish its mission. CIP satisfies long range planning, programming objectives, and documented needs for capability to perform operational functions that cannot be performed as effectively or economically by the use of existing infrastructure, equipment, and/or facilities essential to accomplish mission requirements.

The acquisition of capital assets efficiently and effectively accomplishes the objective for which it is justified which are improved efficiency or effectiveness of operations; replacement of potentially unsafe, beyond economical repair, or inoperative and unusable assets; and environmental, hazardous waste reduction, or regulatory agency (state, local, or Federal) mandated requirements. Alternatives were considered for each project, but procurement is the most cost effective for the government.

Examples of Machinery purchases include:

Replace Boring Mill
The purpose of this project is to replace an existing Milling Machine (2005) with a new unit to maintain capability and increase versatility. The existing mill is becoming less reliable and unable to machine parts to the required tolerances. The wear on the existing machine is now equal to the tolerance band of the part. Parts processing time increases as the operator corrects for increasing machine wear. The proposed unit will be able to machine and measure parts to the required tolerances. It will simplify fixturing and reduce set-up time by enabling multiple operations in one set-up. It will also be used in process gauging to reduce production time. If the Boring Mill is not replaced, the existing machine will eventually fail, resulting in missed engine program schedules, and operator compensation for wear will continue to increase, resulting in scrapped parts. Although alternatives have been contemplated, the best course of action has been determined to be replacement.

Replace Lathe-grinders

The purpose of this project is to replace (3) aging (2002) vertical lathe-grinding machines with (2) new units. The new machines will modernize the shop to accommodate more complicated aircraft engine parts and will include current Occupational Safety and Health Administration (OSHA) guarding. The existing machines are becoming less reliable with holding required tolerances. Part processing time increases as the operator corrects for the increasing machine wear. The proposed units will be able to machine and measure parts to the required tolerances. They will also simplify fixturing, thus reducing set-up time. The existing machines will be 18 years old when the new machines are budgeted for replacement. The useful life of the existing machines is 10 years. If not replaced, operator compensation for machine wear will continue to increase, and parts will begin to be scrapped. Although alternatives have been contemplated, the best course of action has been determined to be replacement.

Rebuild Jig Borer

The purpose of this project is to rebuild an existing Mitsui Seiki Jig Boring machine that was procured in 1986. This is a precision machine tool and is utilized for our most accurate work requirements. The existing Jig Boring machine is the most precise machining tool in the Machine Shop. Due to its age, the electronics, controller, and motors can no longer be supported, which is expected to lead to greater down time in the future due to part obsolescence, procurement difficulties, and limited availability of suppliers.

160mm Computer Numerical Control (CNC) 5-Axis Mill

The purpose of this project is to procure a 160mm 5-axis CNC duo-block milling machine to replace a horizontal jig mill. The functional area supported are E2/C2, T-34, T-44 aircraft, as well as the FA-18 programs to include tail hooks, steering collars, levers, trunnions, and spindles. The deficiency addressed by the project is that this piece of equipment is out of OSHA compliance. It has a temporary permit but requires daily calibration, oiling, and maintenance to remain operational and meet the requirements. This mill is used to work beryllium components. The average backlog is over 60 days to complete a part. Impacts If Not Provided: The FRC will lose the capability, it can become a single point of failure, and fleet readiness will be in jeopardy. The existing horizontal jog mill is over 45 years old, and is out of compliance on a daily basis, losing daily productivity of at least 3 hours to calibrate and oil the machine before they can run parts and sell product. The equipment is not capable of meeting the demand due to age, mechanical issues, and safety/environmental regulations.

CNC Mill Turn with Secondary Spindle and 18' Chuck

This project will replace a CNC mill turn machining center with counter spindles, and is needed to replace the existing CNC Slant Bed lathe (SL65MC) for the Manufacturing Shop. The existing lathe is 20 years old and losing the ability to stay within the required tolerances. The SL65MC supports all of the programs at the FRC, producing bushings and other parts for E-2/C-2, FA-18, H-53, and Ground Support Equipment. Approximately 6000 parts are made on this machine yearly, with an average of 50 parts for each of the 120 part numbers (PNs) programed into the machine. The existing lathe is 20 years old and losing the ability to stay within the required tolerances. This CNC machine is wearing out, causing delays in producing the required parts and adding strain on the 2 other machines capable of making these parts. The other 2 machines do not have the torque and capability the SL65MC has. As a result, making the same part on the either of the other 2 machines takes about 1.5 times longer. CNC mill-turn machining center with counter spindle will allow the FRC to manufacture complex parts, with added machine health monitoring capability.

Deep Draw Bladder Press

The purpose of this project is to procure a turn-key Deep Draw Bladder Press to manufacture machine-die formed parts in direct contribution to the FRC's overall modernization plan. The project will include the machine, secondary containment, a new foundation, and all modern safety features integrated into 1 complete system. Procuring this machine will reduce Environmental Footprint and increase shop efficiency and processing Turn Around Time (TAT). There is a monumental environmental burden with the use of toxic lead and kirksite alloys to produce currently-used foundry dies that will be reduced by 50%, replacing 3 machines with 1. The supported workloads are: all aircraft programs' exterior & structural parts: doublers, skins, stiffeners, and longerons, and channels. This machine will replace manufacture of small-to-medium sized die-formed part numbers within the plant. If not procured, artisans will continue to be unnecessarily exposed to toxic materials with mandatory Navy's Occ-Health Monitoring program. Environmental toxins would not be reduced in the workspace, and damage would continue to the foundation of the building. Technology enhancements include: dies for the new machine will be built by Additive Mfg. technology, reducing HAZMAT requirements and more Artisans trained, equating to higher shop throughput and production levels.

Hydraulic Press
The purpose of this project is to replace the Hydraulic Press located in the Component Manufacture, Weld, and Repair Shop. This press is used on workload of the H-53, V-22, H-1, F-35 and AV-8 aircraft platforms. Current workload for Hydraulic Press is (2861 hrs./yr.) and future workload is (3665 hrs./yr.). With the FRC taking on additional V-22 and F-35 workload, we will not be able to accomplish our current workload or future workload with the current Hydraulic Press. This machine only allows us to make parts very slowly and 1 at a time, thus increasing the production time for a part. Also, due to the age of the Hydraulic Press (manufactured 1944), it is extremely hard to find replacement parts for this machine. This machine has frequent hydraulic leaks which make the work environment very hazardous for the operator as well as lost production time due to cleanup requirements. Over the past year this machine has been down for 1,506 hrs. If the new machine is not procured, the Production shop will be unable to meet future workload requirements due to the age of equipment. The new machine will offer improved speeds and technologically improvements such as automated controls with embedded computer hardware/software. There are no plans to connect to network. Alternative for this machine is to rebuild it or forward its workload to the other locations, but due to TAT and limited capacity, it is not economically advantageous.

Fluid Press
The purpose of this project is to replace the Fluid Press Machine located in the Component Manufacture, Weld, and Repair Shop. This machine currently sees sheet metal forming workload from all aircraft platforms such as AV-8, H-53, H-46, H-1, and V-22. The current machine has exceeded its useful life by 7 years and needs to be replaced, as it goes down frequently and stays down for long periods of time. The new machine will provide technological improvements, have less frequent maintenance, and will use embedded computer hardware/software that will increase speed and accuracy for storage/retrieval of part programs. If this machine does not get purchased, the Production shop will be unable to meet current and future sheet metal forming workload requirements for all aircraft platforms. Alternatives have been considered to forward this machine workload to Warner Robins Air Force Base, but due to TAT and limited capability, it is not economically advantageous. No other FRC is capable of doing this workload. Replacement of this machine is the most cost effective solution for the government

Milling Machine
The purpose of this project is to replace the Olympia Milling Machine with a new milling machine in the same location located in the Machine Repair Power Plant Shop. The current machine is the sole source for H-53 Main Gear Box Housings that are worked at the FRC. This procurement is expected to utilize existing utilities and will require minor facilities modifications depending on the type of equipment that is chosen.

Cleaning Line, Bldg. 4225
The purpose of this project is to upgrade the Cleaning Line located in the Blade/Vane Process Shop. This line is used to strip/clean various aircraft components from all engine platforms. A study will be required to determine the scope of the modifications required to upgrade the facility and utility systems. In addition to replacing a selection of tanks based on their condition, the PBC duct, exhaust fans, and test and balance system will need to be upgraded. Currently, the ducting is cracking and leaking and this condition is reducing the effectiveness of the ventilation system. This condition will cause additional problems and hazards in the future. The exhaust system is both aging and in poor condition. There are two exhaust fans that are over 25 years old; one for a scrubber system and another for a demister. There will be environment impacts to consider for this effort.

Autoclaves, Bldg. 4224
The purpose of this project is to replace two existing jet fuel driven autoclaves, associated burners, and cooling towers with new electric power autoclaves controls and cooling tower for Bldg. 4224

Examples of Quality Control/Testing purchases include:

Coordinate Measuring Machine (CMM)
The purpose of this project is to purchase a CMM for core operations (Emergent/Casualty Repair & precise production requirements). Specified dimensional and geometric tolerances are required, using only calibrated measuring equipment certified and traceable to the National Institute of Standards and Technology (NIST) for accuracy. To determine measurable conformance, the CMM enhances the team's ability with critical diametrical and linear dimensions, geometric tolerances in major and minor characteristics of manufacturing, thread examinations, machine surface buildup, and surface finishes and treatments.

Switching Valve Test Stand
The purpose of this project is to replace an existing (1997) FA-18 Hydraulic Switching Valve Test Stand which can no longer be supported or maintained due to parts non-availability and obsolescence issues. The existing test stand is a single point of failure, one of a kind capability nearing the end of its design lifetime. The new test stand's replacement parts will be commercially available when maintenance is required. This procurement will ensure continuous capability throughout the remaining lifetime of the FA-18 A-D programs. Although alternatives have been considered, it is imperative for the command to procure an equivalent replacement test stand at this time to be able to continue to support the present/future workload of this type.

B770 Real-Time X-Ray System
The purpose of this project is to install a Real-Time X-Ray system to improve the unshielded FA-18 high flight hour inspections. The current process requires 7 barrio monitors and 5 artisans to manually align the shots, necessitating multiple shots before the desired results are achieved. This project will minimize the number of man-hours needed to conduct x-ray shots by replacing the manual task of aligning the tube-head with an automated system capable of delivering a real-time feed in addition to the added capability of digital radiography. This allows the artisans to view the image in real time before the shot is taken, subsequently reducing the image processing time as an instant digital image is produced. This project will reduce current man-hours from 3,712 to 896 per x-rayed aircraft, and required personnel from 12 to 8. Although alternatives have been considered, the current process is inefficient, and this proposed process would eliminate waste in several areas.

Multi-Spectral Targeting System (MTS) System Test Equipment
The purpose of this project is to procure an additional set of MTS-A/B system test equipment for electro-optical targeting system testing and troubleshooting. MTS turret repair workload is increasing and additional variants are coming to the FRC for repair. With this increase, another set of system test equipment will alleviate capacity issues.

Aerial Refueling Store (ARS) Test Stand Modification
The purpose of this project is to modernize the front end of the Automated Storage Retrieval System (ASRS) and replace all components with supportable and up to date equipment to ensure its function. The ASRS supports all engine programs modules and components. Parts are housed in the ASRS until a complete a kit is available to be worked. This equipment is essential to production of the engines IPT. The FA-18, Avionics, and T-44 programs also house components within the ASRS.

Non-Destructive Testing (NDT)- 176 Automated Eddy Current System
The purpose of this project is to replace the NDT-176 Automated Eddy Current Systems, EIN 65923078177 and EIN 65923035274. The existing equipment is over 18 years old. The inspection system is used to detect discontinuities and defects in critical components such as rotating engine parts. Current platforms are T-64, T-58, and F-402 platforms. Examples of components include T-64 disks, spaces, rear air seals and cooling plates, T-58 disks and seals. Axis controllers, tooling and operating software are obsolete. Component repairs are no longer supported by third party repair facilities. The existing facilities will be used.

Linear Hydraulic Test Stand DAS
The purpose of this project is to replace technologically obsolete computer hardware and software, used to control the test stand. Additionally, test and control aspects of the stand will be replaced and upgraded. No site plan required as an existing asset will be upgraded.

T-64 Test Cell #2 Data Acquisition System (DAS)
The purpose of this project is to replace host computer with a new computer running the newest version of Windows, and update the host software, ProTecs. Additionally, the project will replace the throttle system including the interface with the controllers and stepper system, replace the vibration measurement system, retune the dynamometer, inspect and possibly replace the water inlet and outlet lines, remove all references to T700, and procure and integrate a radial bellmouth. The projected sundown for the T-64 program is 2030, however, based on the current condition of the equipment, an upgrade to the throttle, the controls and some facilities repair (piping corrosion) would be necessary for it to remain operational until sundown.

Examples of Support Equipment purchases include:

Ceramic Spray Curing Oven
The purpose of this project is to procure a 1000-degree Fahrenheit (F) ceramic spray curing oven to eliminate single point failure for the ceramic spray curing process. The single point failure oven #7 used for curing of the ceramic coating applied to F-404 and F-414 front engine compressor causes a single point failure. Due to its age, there are recurring maintenance and repair issues which cause work stoppages.

Procure HP JF4200 Additive Manufacturing System
The purpose of this project is to create real, usable aircraft parts as well as further bolster FRCSE's capability to provide rapid prototyping support and near on demand shop tooling and shop aids. The proposed machine will enable FRCSE to produce large batch runs of parts or shop supporting fixtures. Furthermore, the new machine will enable FRCSE to produce watertight parts further expanding its ability to support our various customers. Having the two systems, one located at the depot and one located at the FabLab at Cecil Commerce Center, will enable a new level of collaboration between the R&D efforts of 4.0 engineers who utilize the FabLab at Cecil Field and the production capabilities of 6.2.

Plasma Shop Thermal Imaging & Video Monitoring System
The purpose of this project is to address the current lack of visibility within the six production booths during spray operations. Safety recently mandated that artisans could not be in the booths during spray operations, limiting visibility of the operations taking place. By installing video monitoring cameras that broadcast to an external screen, artisans will be able to monitor and control spray operations from a safe location behind the booth's closed doors. The addition of thermal imaging cameras will ensure correct spray parameters.

Replace Automated Storage and Retrieval System (ASRS) Conveyor Equipment
The purpose of this project is to upgrade the existing Automated Storage and Retrieval System (ASRS), and replace all components with supportable equipment to ensure its function. The ASRS supports all engine programs modules and components. Parts are housed in the ASRS until a complete a kit is available to be worked. The FA-18, Avionics, and T-44 programs also house components within the ASRS.

Vacuum Furnace
The purpose of this project is to procure and install a new Vacuum Furnace in the Heat Treat and Weld Shop to eliminate a single point failure. Failure of the existing furnace would produce an additional cost to the Integrated Product Team (IPT). This cost would include transportation of units and artisans, delays in production, and risk damaging a unit by mishandling through shipping.

Laser Marking System
The purpose of this project is to procure and install a laser marking system in order to modernize from the current marking process, which is an abrasive blaster. The abrasive blaster uses a stencil and high velocity propelled abrasive powder to mark the part. This process has two issues: it requires heavy lifting (potential part damage & worker injury), and it generates toxic/combustible dust (potential Foreign Object Debris (FOD), potential inhalation hazard, potential fire hazard). The laser marking system will eliminate these issues.

Heat Treat Process
The purpose of this project is to replace an existing Drop Bottom Furnace with a system that meets the latest environmental regulations, decreases energy costs, reduces process and ancillary costs as well as decreases the need to reproduce parts. The new furnace will support the Aluminum process for the LM2500, FA-18, E-2/C-2, and components. The deficiency addressed by the project is the elimination of manual hoisting of materials from the Salt Bath process (922F) to the quench tank (filled with cold water). This process creates distorted parts and is dangerous to the artisan due to the high temperatures and existing equipment in place. There is the potential for a fire within the system, increase in delays and timetables, and an increase in the amount of work to be contracted out. The performance improvements will be a decrease in distorted and warped parts, provide ceramic insulation, and a decrease in the quenching time through an automated loading and quenching system. It will meet the BAC5621, BAC5602, GAMPS5108, AMS2750 AND AMS2770 J Class II Furnace regulations. Impact if not replaced is the heightened chance of personnel injury and increased part distortion. Alternatives have been considered, but replacement is the most cost effective for the government.

FA-18 Alignment Fixture
The purpose of this project is to procure an alignment fixture for re-assembly and repair of FA-18E/F/G. The deficiency addressed by the project is that there are currently not enough fixtures to support the program. There is only 1 fixture to support the FA-18E/F/G. The impact if not provided is an increase in delivery times due to excessive processing time caused by obsolete methods, resulting in increased turnaround time. As a result, aircraft will have to wait on repairs until the only fixture is available for use. The improvements are that the fixture is custom designed to fit the FA-18E/F/G. Existing fixtures for the FA-18 do not conform with the E/F/G design, body, or weight of the aircraft. Alternatives have been considered, but procurement is the most cost effective for the government.

Autoclaves Control System
The purpose of this project is to fully retrofit the Autoclave System comprising of two autoclaves (7' and 12'), to include a control system, vacuum pumps, cooling water supply system and nitrogen pressure supply system. The autoclaves will be equipped with a new computer system, higher reliable standard industrial Programmable Logic Control (PLC)/Sensors, and new open source control software with advance reporting system to maximize usability and increase operator efficiency, reducing overall equipment cycle time. New autoclave control software will be able to support multi-equipment processing for the autoclaves, and with Ethernet capability it will be able to store and report data over the RDT&E network. Supporting structures such as gas and steam distribution systems, cooling/heating control elements will be retrofitted to improve efficiency and energy saving. Safety features will be enhanced to prevent and reduce hazards to operators and the surrounding environment. All mentioned technology enhancements will reduce equipment downtime and increase overall performance with better energy savings.

Feel/Trim Actuator Test Stand
The purpose of this project is to procure a new feel/trim actuator test stand to replace current test sets for lateral and longitudinal stick position sensors test bench to prevent workload disruptions. This test stand is needed for the Actuator shop and will support FA-18A-D and E-G Lateral and Longitudinal Stick Position Sensors, NIINs 011630293 and 014617539, along with another program that the FRC does not currently have capability on. Currently, the existing Longitudinal test bench is hard down and 5 upgrades behind current standards. The Lateral test bench (sole source) is too old and has temperature restrictions. Both benches are analog and would be replaced by a test stand that is more accurate and efficient.

Land Marine 2500 Fuel Control Test Stand (LF-8)
The purpose of this project is to procure a new test stand to prevent workload disruptions. This test stand is needed for the Hydraulic shop and will provide capability to support the LM2500 Main Fuel Control sensors such as; constant discharge pressure sensor, and compressor intake temperature sensor. The existing test stand is 29 years old and is frequently down for repairs. There are no replacement parts available for the existing stand.

Laser Cutter
The purpose of this project is to procure a Fiber Laser cutting machine with linear X-Y axis motors to replace Optical Path LVD laser C4000-Model E that has been out of service for 18 months. This Fiber Laser cutting machine with linear X-Y axis motors will be manufacturing precision parts in support of the FA-18, E-2/C-2, AV-8, H-1, H-46, H-60, and H-53 product lines. The obsolete CO2 Laser cutter has high maintenance costs, and has been hard down for the past 18 months waiting for repair parts. All workload has been diverted to other machines within the shop which has affected the throughput of these machines due to time lost in both manufacturing and reprogramming of the machine to correct specifications

Test Stand, A-6, SRA, FA-18E/F
The purpose of this project is to procure a new Test Bench to replace the existing antiquated unit used to conduct testing of A-6 subcomponents to the Generator Converter Unit (GCU) for the FA-18 platform. The FRC has the only modified/customized test stand with this capability in the fleet. The new test stand would meet the fleet demand, reduce process and ancillary costs for the program. The current test stand is beyond it's useful life, even though maintenance performs regular preventive maintenance and is building new cables to ensure the test stand remains operational. The technology, wiring, and overall hardware is rapidly becoming non-operational. Impact if not procured include backorders that will continue to increase within the fleet, cause additional delays to other departments, work stoppages, and put the FA-18E/F aircraft in jeopardy. Alternatives have been considered, but procurement is the most cost effective for the government.

AN/AIC-14 RTCASS/D Offload
The purpose of this project is to re-host the AN/AIC-14 System from the AN/USM-449 (V) to the new RTCASS/D. The deficiency addressed by the project us that the AN/AIC-14 is currently run on AN/USM-449 which is antiquated. Two out of three AN/USM-449 benches are down and cannot be repaired. The remaining AN/USM-449 (V) bench will go hard down and the FRC will be unable to meet fleet requirements for AN/AIC-14 workload. When remaining 449 bench goes hard down, replacement costs will have to be expensed at that time for this effort with a lead time of 24 months for any re-host effort.

Fuel Flow Transmitter Test Stand (UF-7)
The purpose of this project is to procure a new test stand to prevent workload disruptions. This test stand is needed for the Hydraulic shop and will support major fuel components of the LM2500 engines, specifically the Fuel Transmitter. Currently, the existing test stand is too old and has been down numerous times. The indicators on the flow meter stick and the power work intermittently.

Hydraulic System Components Test Stand
The purpose of this project is to procure a new test stand to prevent workload disruptions. This Test Stand is needed for the Hydraulic shop and the supported workload is major hydraulic components of the FA-18 and E-2/C-2 program. The deficiency addressed by the project is that currently, the existing test stand is too old and has been down numerous times. The impacts to production if a new machine is not provided is the inability to support FA-18 and E-2/C-2 hydraulic components. In addition, the FRC would be unable to produce the current work in process to support the Fleet. Other impacts are long periods of down equipment time, inability to process workload, and inability to support customer requirements.

LM2500 Rotor Build Up Stands
The purpose of the project is to procure 2 new LM2500 Rotor Build-Up Stands with stack prediction software. The functional area description and supported workload is the LM2500 and Rotor Build-Up Program. The deficiencies addressed by the project are excessive vibrations, decreased bearing life cycles, poor compressor efficiency, increased programming and fuel costs. This effort will reduce human error and process times for manual self-alignments and balancing of the rotor. If not provided, there will be an increase in Specific Fuel Consumption (SPCK) costs, a decrease in the engine's life cycle, and an increase in programming and labor costs. The technology enhancements include a decrease in the environmental footprint, a more accurate, reproducible and greater quality rotor, an increase in engine throughput, and predictable and engine build schedules. There will be a decrease in re-assembly cost and time, reduced vibration, and improved bearing lice and compressor efficiency.

Test Stand, G-1, SRA, F/A-18EF
The purpose of the project is to procure a new test bench to replace the existing antiquated unit used to conduct testing of G-1 subcomponents to the GCU for the FA-18 platform. The existing unit has been in service since September 2003, and there have been crucial technological upgrades built into newer units manufactured by Testek that will increase productivity to the program. The current unit is used to test the frequency, voltage outputs and currents on G-1 Subcomponents for GCUs in support of the FA-18 aircraft platforms. The deficiency addressed by the project is that the current drive stand is a known single point of failure with the current and anticipated future workload. Machine consistently experiences machine-related electrical failures causing multiple periods of work stoppage, as no other test stands at the FRC can do what this one is designed for. Solid improvements in testing technology, operating systems, and generator models specific to varying FA-18 generations have been incorporated into similar, newer units manufactured for other aviation industrial entities, per info from the manufacturer, for increased efficiency and expedition of testing phases/programs.

Optical Measurement and Inspection System (OMIS)
The purpose of this project is to procure a turn-key OMIS to measure and inspect machined parts. The system will include the inspection equipment along with an enclosure for the robot and all safety features integrated into one complete system. The OMIS will increase productivity and reduce inspection time when measuring large machined parts. Primarily, the FA-18 formers, spars, and longerons and LM 2500 Engine parts, but this machine will also be capable of measuring any machined components manufactured within the FRC. The existing method of measuring and inspecting is manual and labor intensive, whereas this new machine will automate much of the process by increasing the volumetric throughput of parts inspected. Slow inspection times will continue to cause a backlog of work requiring a second shift and overtime expenditures. This technology will provide faster inspection and will be industrial-connectivity ready.

Main Turbojet Fuel Pump Test Stand (LF-17)
The purpose of this project is to remove the existing machine and replace the LF-17 test bench used to test Fuel Pump assemblies installed on FA-18 legacy models in support of Foreign Military Sales. This upgrade will also include a larger test compartment & internal components to accommodate LM2500 fuel pumps previously tested exclusively on the excessed LF-15 bench. Replacing the LF-17 will increase program productivity and worker safety over the existing 32-year-old equipment. Replacement of this bench combines load testing capabilities of 2 similar parts from 2 separate FRC programs into a single bench, properly designed for the combined workload, to include pressure & motor RPM step-down abilities to accommodate both platforms.

Zinc Nickel Plating Line
The purpose of this project is to replace the existing Cadmium Plating line with a new Zinc Nickel Plating Line. The Cadmium plating line supports all of the programs at the FRC. The deficiency addressed by the project is that cadmium electroplates utilized to protect aerospace alloys from corrosion damage are classified as a toxic heavy metal requiring replacement per FRCSEINST 5103.15 and COMFRCISNT 5100.1. The impacts if the project is not provided are continued usage of hazardous materials (cadmium and chromium) Technology Enhancements include improved repair turn-around-time via reduced routing for HE Bake, reduced usage of hazardous materials and heavy metals (Cr+6 and Cd), and improved corrosion performance with reduced re-work benefiting total ownership cost.

Integral Quench Furnace (IQF)
The purpose of this project is to procure a new IQF needed for the Heat Treat Shop. The IQF is the only furnace that heat treats steel parts. Steel parts (bushings, rods, nuts, bolts, washers, etc.) are currently being sent out for heat treating. The IQF supports all of the programs at the FRC. The existing IQF is down and has been down for most part of 2 years, requiring the FRC to send out steel parts for heat treating. Last year it cost the FRC over $92K to send out a total of 277 steel parts for 58 different part numbers for heat treating. The new IQF will have a coupon port, so the artisan will be able to pull the coupon to test from the port and not have to open the front of the furnace.

Compressor, Building 4630
The purpose of this project is to design and install a new compressor outside of Bldg. 4630 in support of the AV-8 Components and Ramp Repair Shops. The compressor will be used in support of additional production for workload that is to be relocated due to workload expansion of surrounding shops.

Waterjet Stripper
The purpose of this project is to upgrade the waterjet stripper located in the Engine Parts Repair Shop. This equipment was purchased in 2001 and has been operating for 15 years with multiple repairs and part replacements. This project will require very little support from the facility and utility team and no facility modification. There will be environmental impacts due to the waste by-product from stripping the components. This equipment will support engines for all aircraft platforms at the FRC.

High Pressure Cold Spray System
The purpose of this project is to replace the legacy high pressure cold spray equipment at the FRC. Weapons systems supported are: H-1, AV-8, H-53 and V-22. This will project not require any facilities modifications.

1500 HP Air Compressor
The purpose of this project is to replace 1500 HP Air Compressor #1 & #2 for the pneumatic component test system 137 supporting multiple shops and platforms within 94400 Components. The pneumatic component test system simulates engine bleed air conditions to pneumatic components under test. The new air compressor will increase the maximum useable flow rate by 20 lbs./min for one compressor by replacing a 30-year-old compressor that has a failing compressor air end. This will increase the net operating capacity from 750 lbs./min to 770 lbs./min. The usable operating capacity remains at 450 lbs./min. This procurement will replace the existing 1500 HP Air compressor #2 and all associated components (motor, starter, after-cooler, controls, etc.) with a new compressor capable of meeting the current and future demands of the pneumatics component test system. Existing utilities will be replaced and facilities modifications are expected with this type of equipment.

Procure Multi Stage Air Compressor

The purpose of this project is to procure a Multi Stage Air Compressor #1 for the pneumatic component test system located outside of building 137 supporting multiple shops and platforms within 94400 Components. The pneumatic component test system simulates engine bleed air conditions to pneumatic components under test. The new multi stage air compressor will provide a critical increase to the overall net usable flow rate by 130 lbs./min of the pneumatic component test system. This will increase the net operating capacity from 620 lbs./min to 750 lbs./min. This will allow the usable operating capacity to increase from 320 lbs./min to 450 lbs./min. This procurement will replace an existing compressor and all associated components with a new multi stage air compressor capable of increasing the system's overall capacity, as well as meeting the current and future demands of one configuration of the pneumatics component test system. Existing utilities will be replaced and facilities modifications are expected with this type of equipment.

Dust Collection System

The purpose of this project is to replace 3 High-Efficiency Particulate Air (HEPA) Dust Collection Systems. Each HEPA System will support a booth. Booth 1 is a manual metal spray system for plasma, combustion and wire. Booth 2 is a robotic metal spray system for plasma and combustion. Booth 3 is a robotic metal spray system for high velocity oxygen fuel (HVOF), plasma and combustion. The equipment procured for replacement will support various aircraft components from all aircraft platforms. There will be environmental impacts. This project will require facility and utility support and possible modification.

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Department of the Navy/ Depot Maintenance	#002 - ADPE						Fleet Readiness Centers		
	FY 2018			FY 2019			FY 2020		
ADP Equipment	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Computer Hardware (Production)	0	-	$0	0	-	$0	0	-	$0
Computer Hardware (Network)	5	687	$3,433	1	2,000	$2,000	0	-	$0
Computer Software (Operating System)	1	970	$970	0	-	$0	0	-	$0
Telecommunications	1	590	$590	0	-	$0	0	-	$0
Other Support Equipment	0	-	$0	0	-	$0	0	-	$0
Total	7	713	$4,993	1	2,000	$2,000	0	-	$0

Justification:

As the Department of the Navy's provider of depot level maintenance, repair, overhaul, & upgrades for aircraft, the Fleet Readiness Centers (FRCs) depend heavily on the acquisition of capital assets through Capital Investment Program to accomplish its mission. CIP satisfies long range planning, programming objectives, and documented needs for capability to perform operational functions that cannot be performed as effectively or economically by the use of existing infrastructure, equipment, and/or facilities essential to accomplish mission requirements.

The acquisition of the capital assets efficiently and effectively accomplishes the objective for which it is justified which are; improved efficiency or effectiveness of operations, beyond economical repair, or inoperative and unusable assets, or regulatory agency (state, local, or Federal) mandated requirements. Requested computer hardware, software, and networks will update and connect current systems to ensure IA (Information Assurance) compliance. For each project alternatives were considered, but the procurement is the most cost effective for the government.

Examples of Computer Hardware (Network) purchases include:

Wireless IT Network Infrastructure
The purpose of this project is to plan, design, and install a wireless network core infrastructure, and identify, obtain, implement, configure, and distribute wireless peripherals. This project is to be accomplished or phased over a three-year period. It will provide real-time data input and output to and from laptops, barcode scanners for machine shop data, tool tracking, and parts tracking when configured for use on an 802.11 wireless network. With needed wireless infrastructure in place, this project will support pilot(s) for machine health monitoring and RFID projects. Current lack of wireless infrastructure prohibits all wireless projects from proceeding. This project includes a wireless solution that will mobilize laptop users, add wireless communications to all conference rooms and offices, and allow wireless shop transactions to be performed real-time as needed. Currently, Work in Progress (WIP) items are moved to a fixed workstation outside the shop causing delays and errors. Parts (WIP) and tools cannot be effectively tracked without wireless infrastructure followed by procurement and setup of production shop oriented wireless devices. This project will make it possible for E&E inspections, engineering on-the-floor support and investigations to be completed in the production areas. If not provided, there will be no mobile connected workforce, no gains in aircraft or engines turnaround time, no workforce efficiency improvements, and no office/conference room wireless systems.

Industrial Connectivity Phase III
The purpose of this project is to provide RDT&E Network Connectivity to various areas throughout the facilities. These areas include but are not limited to: Engine Test Cells, Hydraulics Test Cells, Components Test Cells, Auxiliary Power Unit Test Cells, Gearbox Test Cells, Autoclave Controllers, Non Destructive Inspection and Vibration Equipment, Composite Shop and various legacy aircraft platforms. These areas are currently operating with non-IA (Information Assurance) compliant standalone and legacy computers which cannot be replenished/kept up to date and cannot communicate with those that need data from them. These areas will continue to operate in a non-IA compliant environment which is inefficient and cannot be updated with new hardware and software. By providing a network, it will bring them into IA compliance, upgrade their hardware and software, and increase efficiencies. Alternatives have been considered, but procurement is the most cost effective for the government.

Examples of Computer Software (Operating System) purchases include:

Engineering Configuration Management Phase II (ECM Ph. II)
The purpose of this project is to provide a data management software tool to provide a closed loop data configuration management system as part of the Industrial Connectivity initiative within and across FRCs, to ensure correct Engineering Design data is utilized in the manufacturing, production and industrial departments at all times. Compliance with this project additionally equips the COMFRC with 3D data management capability.

Examples of Telecommunications purchases include:

Main Telephone Switch Phase II
The purpose of this project is to replace aging/necessary telephone switch infrastructure/architecture for the FRC. This project is in phase two, replacing remotes.

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Department of the Navy/ Depot Maintenance	#004 - Minor Construction						Fleet Readiness Centers		
	FY 2018			FY 2019			FY 2020		
Minor Construction	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Replacement	9	756	$6,802	4	1,060	$4,240	2	1,771	$3,541
New Construction	0	-	$0	1	2,000	$2,000	1	2,000	$2,000
Environmental Capability	0	-	$0	0	-	$0	0	-	$0
Total	9	756	$6,802	5	1,248	$6,240	3	1,847	$5,541

Justification:

As the Department of the Navy's provider of depot level maintenance, repair, overhaul, & upgrades for aircraft, the Fleet Readiness Centers (FRCs) depend heavily on the acquisition of capital assets through Capital Investment Program to accomplish its mission. CIP satisfies long range planning, programming objectives, and documented needs for capability to perform operational functions that cannot be performed as effectively or economically by the use of existing infrastructure and/or facilities essential to accomplish mission requirements. None of the projects in this budget exceed current MILCON thresholds.

Budgeted projects are for construction, expansion, or improvement of a complete and useable building, structure, or other real property.

Examples of Replacement Capability purchases include:

Construct - Preservation Shop Space
The purpose of this project is to construct approximately 1500 sf of space for Preservation Shop personnel, equipment, and vehicles. This project will require the demolition of the existing building. The FRC's Preservation Program was deficient and staffing has been increased to meet AMI (Aviation Maintenance Inspection) requirements. Preservation Shop personnel and equipment are currently housed in temporary trailers and require long-term accommodations. This project will ultimately position the Preservation Shop near the FA-18 production space and the hush house (high-power preservation turns). If not implemented, space would have to be taken from Production to accommodate the Preservation Shop when the temporary trailers are removed. Current chosen location provides the least amount of negative production impact due to proximity.

Construct - Engines & Aircraft Parts Storage South
The purpose of this project is to create adequate storage space for aircraft parts and engines. This project will demolish the existing building and construct a modern storage facility on the same site. The new facility will be approximately 5,000 sf with a 16 ft. high stacking height. The existing building, a metal Aircraft Preservation Container Unit (APCU) installed in 1967, was not designed as a storage facility and has poor space utilization. Due to the humid riverfront environment, it has considerable rust throughout, which often falls off the building and flows into the river during storms. Some of the building's structural steel no longer provides sufficient support. Additionally, the FRC is leasing off-base storage space due to lack of availability on base. The existing space is insufficient for the projected workload, and deterioration of the building will soon make it unusable for storage. If not provided, there will be inadequate storage space at the complex.

Construct - Bldg. 101 FA-18 Wing Shop Storage
The purpose of this project is to remove the inefficient and unsuitable storage area, and replace it with a new, useful storage area. The current structures are in disrepair due to age and deterioration. The FA-18 Wing shop is now performing workload that was previously done in the FA-18 Aircraft Line Wing Shop, and that workload will increase with the Command's FA-18 aircraft requirement. In order for the Wing Shop to be able to handle the influx of wings from the line, additional work cells need to be made. This project will open space on the shop floor for more production cells by providing additional storage for fixtures, wings in queue/delay, and fixture detail. The new storage space will double the storage capacity of the shop, improve shop flow, and allow additional storage space for the Machine Shop. If not implemented, the shop may not be able to meet the scheduled delivery of wings due to a lack of work space. Although alternatives have been considered, they are expensive and less effective.

Design - Administrative Building (Ranger and Birmingham)
The purpose of this project is to create adequate administrative space for engineering and logistics personnel on NAS Jacksonville. This project will construct a modern professional facility on the same site as an existing admin trailer. The new facility will be approximately 3,000 sf and will accommodate 20 personnel. This project will solve the emergent need to house engineering and logistic personnel supporting all programs.

Examples of New Construction purchases include:

Construct - B168 Addition
The purpose of this project is to build an annex to B168. FRC RADAR programs are increasing in workload, with some programs located in B168 and some in B101U. This project will allow co-location of all RADAR repair and testing to one site (B168) and eliminate long travel between buildings. Moving all RADAR work to B168 will open up 25% of the footprint in the overcrowded Countermeasures Shop in B101U. This project will also provide capacity for increasing Joint Strike Fighter (JSF) Electro-Optical Targeting System (EOTS) workload in B168, which will require an additional 1500 sq. ft. in 2021. This project will eliminate risk caused by travel of classified components between B168 and B101U for RADAR repair and testing of classified FA-18 ALR-67 components. If the addition is not constructed, the FRC will run out of available footprint to adequately meet repair demand.

CAPITAL BUDGET EXECUTION
DEPARTMENT OF THE NAVY
DEPOT MAINTENANCE - FLEET READINESS CENTERS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

FY	Line Item	Category	Capability/Project	Initial Request	Current Proj Cost	Approved Change	- Explanation
2018	**1**	**Non ADP**		**$21.225**	**$30.303**	**$9.078**	-
			Material Handling	$0.287	$0.000	($0.287)	1 cancelled
			Quality Control/Testing	$0.370	$1.925	$1.555	1 increase, 4 new
			Machinery	$14.569	$15.819	$1.250	1 cancelled, 1 increase, 5 new
			Support Equipment	$5.999	$12.559	$6.560	1 cancelled, 7 new
	2	**ADP**		**$9.882**	**$4.993**	**-$4.889**	
			Computer Hardware (Production)	$0.870	$0.000	($0.870)	2 cancelled
			Computer Hardware (Network)	$7.452	$3.433	($4.019)	2 cancelled, 2 new, 1 decrease
			Computer Software (Operating)	$0.970	$0.970	$0.000	
			Telecommunications	$0.590	$0.590	$0.000	
	3	**Software**		**$0.000**	**$0.000**	**$0.000**	
	4	**Minor Construction**		**$6.600**	**$6.802**	**$0.202**	
			Replacement	$5.600	$6.802	$1.202	3 cancelled, 3 increase, 5 new
			New Construction	$1.000	$0.000	-$1.000	1 cancelled
TOTAL FY 2018 CIP Program				**$37.707**	**$42.098**	**$4.391**	-
							-

FY	L.I.	Category	Capability/Project	I.R.	C.P.C.	A.C.	Explanation
2019	**1**	**Non ADP**		**$33.250**	**$35.190**	**$1.940**	-
			Quality Control/Testing	$4.500	$2.000	($2.500)	1 increase, 1 deferred
			Machinery	$5.800	$7.355	$1.555	2 increase
			Support Equipment	$22.950	$25.835	$2.885	2 cancelled, 1 increase, 4 new
	2	**ADP**		**$9.080**	**$2.000**	**-$7.080**	-
			Computer Hardware (Production)	$5.805	$0.000	-$5.805	3 cancelled
			Computer Hardware (Network)	$3.275	$2.000	-$1.275	1 cancelled
	3	**Software**		**$0.000**	**$0.000**	**$0.000**	-
	4	**Minor Construction**		**$1.100**	**$6.240**	**$5.140**	-
			Replacement	$1.100	$4.240	$3.140	2 increase, 2 new
			New Construction	$0.000	$2.000	$2.000	1 new
TOTAL FY 2019 CIP Program				**$43.430**	**$43.430**	**$0.000**	-
							-

FY	L.I.	Category	Capability/Project	I.R.	C.P.C.	A.C.	Explanation
2020	**1**	**Non ADP**		**$35.730**	**$35.730**	**$0.000**	-
			Quality Control/Testing	$9.000	$9.000	$0.000	
			Machinery	$13.620	$13.620	$0.000	
			Support Equipment	$13.110	$13.110	$0.000	
	2	**ADP**		**$0.000**	**$0.000**	**$0.000**	-
	3	**Software**		**$0.000**	**$0.000**	**$0.000**	-
	4	**Minor Construction**		**$5.541**	**$5.541**	**$0.000**	-
			Replacement	$3.541	$3.541	$0.000	
			New Construction	$2.000	$2.000	$0.000	
TOTAL FY 2020 CIP Program				**$41.271**	**$41.271**	**$0.000**	-

CARRYOVER RECONCILIATION
DEPARTMENT OF THE NAVY
DEPOT MAINTENANCE - FLEET READINESS CENTERS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	FY 2018	FY 2019	FY 2020
Part 1			
1. Net Carry-In	988.6	1,208.1	1,115.0
2. Revenue	2,527.1	2,581.0	2,417.7
3. New Orders	2,746.6	2,488.0	2,352.3
4. Exclusions:			
Foreign Military Sales	50.1	40.7	31.6
Base Realignment and Closure	0.0	0.0	0.0
Other Federal Department and Agencies	1.2	2.9	4.6
Non-Federal and Others	95.0	97.0	93.4
Institutional Major Range & Test Facility Base	0.0	0.0	0.0
OUSD(C) Approved Carryover Waiver	0.0	0.0	0.0
5. Orders for Carryover Calculation	2,600.3	2,347.4	2,222.7
6. Weighted Average Outlay Rate	64.8%	63.3%	63.0%
7. Carryover Rate	35.2%	36.7%	37.0%
8. Allowable Carryover	1,065.3	980.8	964.7
Allowable Carryover(First Year)	915.3	861.5	822.4
Allowable Carryover (Second Year Procurement-funded Orders)	150.0	119.3	142.2
Part II			
9. Balance of Customer Order at Year End	1,208.1	1,115.0	1,049.7
10. Work-in-progress	31.5	33.9	35.2
11. Exclusions:			
Foreign Military Sales	51.8	48.9	48.9
Base Realignment and Closure	0.0	0.0	0.0
Other Federal Department and Agencies	11.8	8.9	8.9
Non-Federal and Others	37.7	42.6	36.5
Institutional Major Range & Test Facility Base	0.0	0.0	0.0
OUSD(C) Approved Carryover Waiver	16.5	0.0	0.0
12. Calculated Actuals Carryover	1,058.8	980.8	920.3

Some totals may not add due to rounding.
EXWC,NSWC,NUWC,NAWCDIV,SPAWAR,NRL use RDTEN rates.

MATERIAL INVENTORY DATA
DEPARTMENT OF THE NAVY
DEPOT MAINTENANCE - FLEET READINESS CENTERS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2018
(DOLLARS IN MILLIONS)

FY 2018

	Total	Mobilization	----- Peacetime ----- Operating	Other
Material Inventory BOP	$ 14.1	$ -	$ 14.1	$ -
Purchases				
A. Purchases to Support Customer Orders	$ 891.2	$ -	$ 891.2	$ -
B. Purchase of long lead items in advance of customer orders	-	-	-	-
C. Other Purchases (List)	-	-	-	-
D. Total Purchases	$ 891.2	$ -	$ 891.2	$ -
Material Inventory Adjustments				
A. Material Used in Maintenance	$ 889.3	$ -	$ 889.3	$ -
B. Disposals, theft, losses due to damages	-	-	-	-
C. Other reductions (List)	-	-	-	-
D. Total inventory adjustments	$ 889.3	$ -	$ 889.3	$ -
Material Inventory EOP	$ 16.0	$ -	$ 16.0	$ -

MATERIAL INVENTORY DATA
DEPARTMENT OF THE NAVY
DEPOT MAINTENANCE - FLEET READINESS CENTERS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2018
(DOLLARS IN MILLIONS)

FY 2019

			----- Peacetime -----	
	Total	Mobilization	Operating	Other
Material Inventory BOP	$ 16.0	$ -	$ 16.0	$ -
Purchases				
A. Purchases to Support Customer Orders	$ 907.2	$ -	$ 907.2	$ -
B. Purchase of long lead items in advance of customer orders	-	-	-	-
C. Other Purchases (List)	-	-	-	-
D. Total Purchases	$ 907.2	$ -	$ 907.2	$ -
Material Inventory Adjustments				
A. Material Used in Maintenance	$ 896.8	$ -	$ 896.8	$ -
B. Disposals, theft, losses due to damages	-	-	-	-
C. Other reductions (List)	-	-	-	-
D. Total inventory adjustments	$ 896.8	$ -	$ 896.8	$ -
Material Inventory EOP	$ 26.4	$ -	$ 26.4	$ -

MATERIAL INVENTORY DATA
DEPARTMENT OF THE NAVY
DEPOT MAINTENANCE - FLEET READINESS CENTERS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2018
(DOLLARS IN MILLIONS)

FY 2020

	Total	Mobilization	----- Peacetime ----- Operating	Other
Material Inventory BOP	$ 26.4	$ -	$ 26.4	$ -
Purchases				
A. Purchases to Support Customer Orders	$ 927.4	$ -	$ 927.4	$ -
B. Purchase of long lead items in advance of customer orders	-	-		-
C. Other Purchases (List)	-	-	-	-
D. Total Purchases	$ 927.4	$ -	$ 927.4	$ -
Material Inventory Adjustments				
A. Material Used in Maintenance	$ 926.7	$ -	$ 926.7	$ -
B. Disposals, theft, losses due to damages	-	-	-	-
C. Other reductions (List)	-	-	-	-
D. Total inventory adjustments	$ 926.7	$ -	$ 926.7	$ -
Material Inventory EOP	$ 27.1	$ -	$ 27.1	$ -

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DEPOT MAINTENANCE SIX PERCENT CAPITAL INVESTMENT PLAN
DEPARTMENT OF THE NAVY
DEPOT MAINTENANCE - FLEET READINESS CENTERS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	REVENUE (Maintenance, Repair, Overhaul) 3 year average			**BUDGETED CAPITAL** (Modernization, Efficiency)		
	FY 15-17	**FY 16-18**	**FY 17-19**	**FY 2018**	**FY 2019**	**FY 2020**
	1,913.9	2,023.7	2,207.7			
	2,023.7	2,207.7	2,527.1			
	2,207.7	2,527.1	2,581.0			
Revenue (Avg)	2,048.4	2,252.8	2,438.6			
Working Capital Fund (Avg)	2,048.4	2,252.8	2,438.6			
Appropriations (Avg)	0.0	0.0	0.0			
Total Revenue (Avg)	2,048.4	2,252.8	2,438.6			
WCF Depot Maintenance Capital Investment						
Facilities/ Work Environment				71.4	43.4	42.1
Equipment				35.3	37.2	35.7
Equipment (Non-Capital Investment Program)				17.1	17.3	14.9
Processes				0.0	0.6	0.0
Total WCF Investment				123.7	98.5	92.7
Appropriated Funding - List by Appropriation						
MILCON				15.7	5.4	111.5
Procurement				30.7	74.1	42.5
Operation & Maintenance				43.2	5.4	0.0
Total Appropriated Funding				89.6	84.8	154.0
Component Total				213.3	183.3	246.7
Minimum 6% Investment				122.9	135.2	146.3
Investment Over/Under Requirement				90.4	48.1	100.4
				10.4%	**8.1%**	**10.1%**

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2. Marine Corps Depots

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NARRATIVE
DEPARTMENT OF THE NAVY
DEPOT MAINTENANCE - MARINE CORPS DEPOTS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Mission Statement / Overview:
The Marine Corps Depot Maintenance Activity Group (MC DMAG) provides innovative, worldwide, depot level and related maintenance, rebuild, modification, and repairs, on Department of the Navy (DoN), federal and non-federal customers' war fighting weapon systems. MC DMAG also provides engineering, manufacturing, remanufacturing, preservation, calibration, fabrication, technical evaluation, and other services required to maximize the readiness and sustainability of ground combat and combat support weapon systems, associated parts, assemblies, and subassemblies.

MC DMAG provides quality products and responsive maintenance support services that maintain a core industrial base in support of Department of Defense (DoD) operating forces mobilization, surge, reset, and reconstitution requirements. MC DMAG enables equipment readiness and operational availability by refurbishing equipment to a like new condition before returning it to the warfighter.

Activity Group Composition:

Activities	Location
Marine Depot Maintenance Command	Albany, GA
Marine Depot Maintenance Command	Barstow, CA

Significant Changes since the FY 2019 President's Budget:
No significant changes since FY 2019 President's Budget.

Financial Profile:

Orders/Revenue/Expense/Operating Results ($Millions):

	FY 2018	FY 2019	FY 2020
Orders	$379.2	$425.9	$353.0
Revenue	$360.1	$433.0	$385.9
Expense	$354.3	$422.1	$411.4
Operating Results	$5.8	$10.9	-$25.5
Capital Surcharge	$0.0	-$9.0	$0.0
Net Operating Results (NOR)	$5.8	$1.9	-$25.5
Prior Year AOR	$17.8	$23.6	$25.5
Other Changes Affecting AOR	$0.0	$0.0	$0.0
Accumulated Operating Results (AOR)	$23.6	$25.5	$0.0

Some totals may not add due to rounding.

NARRATIVE
DEPARTMENT OF THE NAVY
DEPOT MAINTENANCE - MARINE CORPS DEPOTS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Orders, Revenue and Expense:

Orders – New orders were $379.2 million in FY 2018, and are projected to be $425.9 million in FY 2019, and $353.0 million in FY 2020. Budgeting for workload from non-organic sources was based upon letters of intent from customers. The fluctuation in new orders across all years is due to anticipated reductions in workload from other services and decreases in Reset workload, which has accounted for the majority of throughput since FY 2012.

Revenue – Revenue fluctuates across the budget years due to customer requirements as mentioned above in orders. As MC DMAG typically utilizes contracted workforce to support workload, the FY 2019 workload revisions and subsequent adjustments to carryover projections resulted in MC DMAG increased demand for contract labor in the FY 2020 budget.

Expenses – Total expenses were $354.2M in FY 2018, and projected to be $422.1 million in FY 2019, and $411.4 million in FY 2020.

Collections/Disbursements/Outlays ($Millions):	FY 2018	FY 2019	FY 2020
Collections	$389.8	$413.4	$420.1
Disbursements	$417.8	$417.4	$411.4
Outlays	$28.0	$4.0	($8.7)

Some totals may not add due to rounding.

Workload:

Workload decreased in the following commodities in FY2020: Communication and Electronics; Ordnance; Medium Tactical Vehicle Replacements (MTVR); Logistics Vehicle System Replacements (LVSR); and Amphibious Assault Vehicles (AAV).

Direct Labor Hours (000):	FY 2018	FY 2019	FY 2020
Current Estimate	2,707	2,812	2,747

An increase in direct contractors is planned in FY 2019 with a slight decrease in FY 2020.

Performance Indicators:
The primary performance indicator is unit cost, which represents the average cost of delivering goods and services to customers.

NARRATIVE
DEPARTMENT OF THE NAVY
DEPOT MAINTENANCE - MARINE CORPS DEPOTS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Unit Cost:	**FY 2018**	**FY 2019**	**FY 2020**
Total Stabilized Cost ($Millions)	$354.3	$422.1	$411.4
Workload (DLHs) (000)	2,707	2,812	2,747
Unit cost (per DLH)	$130.86	$150.09	$149.76

In FY 2019, MC DMAG is projected to execute more direct labor hours with a decrease in FY 2020.

Stabilized / Composite Rates:	**FY 2018**	**FY 2019**	**FY 2020**
Stabilized Rate	$131.53	$142.15	$139.07
Change from Prior Year		$10.65	($3.08)
Composite Rate Change		8.07%	-2.17%

Summary of Workload Indicators:

Performance Indicators:	**FY 2018**	**FY 2019**	**FY 2020**
Schedule Conformance	99.8%	99.8%	99.8%
Quality Deficiency Reports	0.1%	0.1%	0.1%
Inventory Turnover Ratio	10.6:1	13.7:1	14.4:1

It is MC DMAG's goal to always provide customers with affordable services that meet expected schedules.

Staffing:

Civilian/Military ES & Workyears:	**FY 2018**	**FY 2019**	**FY 2020**
Civilian End Strength	1,421	1,448	1,423
Civilian Workyears (straight time)	1,360	1,446	1,438
Military End Strength	11	11	11
Military Workyears	11	11	11

Civilian Personnel: Civilian personnel reflects workforce levels necessary to accommodate planned workload without excessive use of overtime hours. MC DMAG utilizes contract artisans to compliment civilian workforce levels and to meet demand fluctuations in workload.

Military Personnel: Military end-strength is expected to remain consistent throughout the budget and future years.

NARRATIVE
DEPARTMENT OF THE NAVY
DEPOT MAINTENANCE - MARINE CORPS DEPOTS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Capital Investmet Program (CIP) Authority ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Equipment, Non-ADP / Telecom	$5.0	$10.2	$6.5
Equipment, ADPE / Telecom	$0.4	$0.0	$0.0
Software Development	$0.0	$0.0	$0.0
Minor Construction	$0.0	$0.0	$2.0
Total	$5.4	$10.2	$8.5

Some totals may not add due to rounding.

MC DMAG will execute a capital surcharge in FY 2019 to support increased CIP Authority for Depot 21st Century projects.

Carryover Compliance (Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Net Carry-In	$144.6	$163.7	$156.6
Allowable Carryover	$151.4	$172.8	$141.7
Calculated Actual Carryover	$147.5	$148.7	$118.2
Delta (Actual-Allowable): Above Ceiling (+)/Below Ceiling (-)	($3.9)	($24.1)	($23.5)

Some totals may not add due to rounding.

In FY 2018, MC DMAG ended the year under the allowable carryover ceiling and plans to be under the carryover ceilings in both FY 2019 and FY 2020.

REVENUE AND EXPENSES
DEPARTMENT OF THE NAVY
DEPOT MAINTENANCE - MARINE CORPS DEPOTS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	FY 2018	FY 2019	FY 2020
Revenue:			
Gross Sales			
Operations	354.1	417.3	379.0
Capital Surcharges	0.0	9.0	0.0
Capital Investment Recovery	6.0	6.7	6.9
Other Income			
Total Income	360.1	433.0	385.9
Expenses			
Cost of Materiel Sold from Inventory			
Salaries and Wages:			
Military Personnel Compensation & Benefits	0.7	0.9	0.9
Civilian Personnel Compensation & Benefits	136.1	153.6	153.1
Travel and Transportation of Personnel	3.6	3.1	3.1
Material & Supplies (Internal Operations)	120.8	116.7	112.9
Equipment	14.0	14.2	13.3
Other Purchases from NWCF	1.9	2.5	2.5
Transportation of Things	0.0	0.0	0.0
Capital Investment Recovery	6.0	6.7	6.9
Printing and Reproduction	0.1	0.2	0.2
Advisory and Assistance Services	0.0	0.0	0.0
Rent, Communication, Utilities & Misc Charges	4.8	6.4	6.5
Other Purchased Services	66.2	117.9	111.8
Total Expenses	354.2	422.1	411.4
Work in Process Adjustment	0.1	0.0	0.0
Comp Work for Activity Retention Adjustment	-	-	-
Cost of Goods Sold	354.3	422.1	411.4
Operating Result	5.8	10.9	(25.5)
Adjustments Affecting NOR	-	(9.0)	-
Capital Surcharges	-	(9.0)	-
Extraordinary Expenses Unmatched	-	-	-
Other Changes Affecting NOR (All Others)	-	-	-
Net Operating Result	5.8	1.9	(25.5)
PY AOR	17.8	23.6	25.5
TOTAL AOR	0.0	0.0	0.0
Non-Recoverable Adjustments impacting AOR	-	-	-
AOR for budget purposes	23.6	25.5	0.0

SOURCES OF NEW ORDERS & REVENUE
DEPARTMENT OF THE NAVY
DEPOT MAINTENANCE - MARINE CORPS DEPOTS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	FY 2018	FY 2019	FY 2020
1. New Orders	379.2	425.9	353.0
a. Orders from DoD Components:	342.3	392.2	319.3
Department of the Navy	293.7	348.4	284.8
O & M, Navy	3.1	8.5	8.5
O & M, Marine Corps	266.6	326.0	262.4
O & M, Navy Reserve	0.0	0.0	0.0
O & M, Marine Corp Reserve	13.8	7.1	7.1
Aircraft Procurement, Navy	0.9	0.0	0.0
Weapons Procurement, Navy	0.0	0.0	0.0
Ammunition Procurement, Navy/MC	0.0	0.0	0.0
Shipbuilding & Conversion, Navy	0.0	0.0	0.0
Other Procurement, Navy	0.0	0.0	0.0
Procurement, Marine Corps	8.7	6.8	6.8
Family Housing, Navy/MC	0.0	0.0	0.0
Research, Dev., Test, & Eval., Navy	0.7	0.0	0.0
Military Construction, Navy	0.0	0.0	0.0
National Defense Sealift Fund	0.0	0.0	0.0
Other Navy Appropriations	0.0	0.0	0.0
Other Marine Corps Appropriations	0.0	0.0	0.0
Department of the Army	9.7	8.2	8.2
Army Operation & Maintenance	8.3	8.2	8.2
Army Res, Dev, Test, Eval	0.0	0.0	0.0
Army Procurement	1.3	0.0	0.0
Army Other	0.1	0.0	0.0
Department of the Air Force	38.6	35.5	26.3
Air Force Operation & Maintenance	38.6	35.5	26.3
Air Force Res, Dev, Test, Eval	0.0	0.0	0.0
Air Force Procurement	0.0	0.0	0.0
Air Force Other	0.0	0.0	0.0
DOD Appropriation Accounts	0.2	0.0	0.0
Base Closure & Realignment	0.0	0.0	0.0
Operation & Maintenance Accounts	0.0	0.0	0.0
Res, Dev, Test & Eval Accounts	0.2	0.0	0.0
Procurement Accounts	0.0	0.0	0.0
Defense Emergency Relief Fund	0.0	0.0	0.0
DOD Other	0.0	0.0	0.0
b. Orders from other Fund Activity Groups	16.6	27.4	27.4
c. Total DoD	358.9	419.6	346.7
d. Other Orders:	20.3	6.4	6.4
Other Federal Agencies	1.8	4.6	4.6
Foreign Military Sales	18.5	1.8	1.8
Non Federal Agencies	0.0	0.0	0.0
2. Carry-In Orders	144.6	163.7	156.6
3. Total Gross Orders	523.8	589.6	509.7
a. Funded Carry-Over before Exclusions	163.7	156.6	123.8
4. Revenue(-)	360.1	433.0	385.9
5. End of Year Work-In-Process (-)	0.8	0.9	0.9
6. FMS, BRAC, Other Federal, Non-Federal orders, and Inst. MRTFB (-)	15.4	7.1	4.7
7. Funded Carryover	147.5	148.7	118.2

Note: Line 5 (End of Year Work-In-Process) is adjusted for Non-DOD BRAC, FMS, and Institutional MRTFB

CHANGES IN THE COSTS OF OPERATIONS
DEPARTMENT OF THE NAVY
DEPOT MAINTENANCE - MARINE CORPS DEPOTS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	Costs
FY 2018 Estimated Actuals	**354.3**
FY 2019 President's Budget:	**390.2**
Estimated Impact in FY 2019 of Actual FY 2018 Experience:	**0.0**
Pricing Adjustments:	**0.3**
Civilian Personnel	0.0
General Purchase Inflation	0.3
Program Changes:	**10.7**
Direct Labor	9.7
Direct Material	**-6.5**
Direct Contract Services	**7.0**
Direct Other Purchases	**0.5**
Other Changes:	**20.9**
Capital Investment Recovery	-0.9
Facilities Sustainment, Restoration & Modernization	4.9
Indirect Labor	4.0
Indirect Material	0.8
Depreciation	11.6
Indirect Contractual	0.3
VERA/VSIP	0.2
Travel/Training	0.0
FY 2019 Current Estimate:	**422.1**
Pricing Adjustments:	**4.4**
Annualization of Prior Year Pay Raises	**0.0**
Civilian Personnel	0.0
Military Personnel	0.0
FY 2020 Pay Raise	**0.0**
Civilian Personnel	0.0
Military Personnel	0.0
Fuel Price Changes	0.0
General Purchase Inflation	1.9
Other Price Changes (list)	**2.5**
Working Capital Fund Price Changes	2.5
Productivity Initiatives and Other Efficiencies:	**0.0**
Program Changes:	**-13.9**
Direct Labor	-2.0
Direct Material	**-4.6**
Direct Contract Services	**-7.4**
Direct Other Purchases	**0.1**
Other Changes:	**-1.2**
Capital Investment Recovery	0.0
Facilities Sustainment, Restoration & Modernization	-2.9
Change in work days	0.0
Depreciation	0.2
Travel/Training	1.5
Civilian Equivalency Rate Changes	0.0
FY 2020 Estimate:	**411.4**

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CAPITAL INVESTMENT SUMMARY
DEPARTMENT OF THE NAVY
DEPOT MAINTENANCE - MARINE CORPS DEPOTS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

		FY 2018		FY 2019		FY 2020	
Line #	Description	Quantity	Total Cost	Quantity	Total Cost	Quantity	Total Cost
1	**Non-ADPE and Telecom Equipment >= $.250M**	**3**	**$4.992**	**7**	**$10.200**	**5**	**$6.450**
	- Vehicles	0	$0.000	0	$0.000	0	$0.000
	- Material Handling	0	$0.000	0	$0.000	0	$0.000
	- Installation Security	0	$0.000	0	$0.000	0	$0.000
	- Quality Control/Testing	0	$0.000	0	$0.000	0	$0.000
	- Medical Equipment	0	$0.000	0	$0.000	0	$0.000
	- Machinery	0	$0.000	2	$4.000	0	$0.000
	- Support Equipment	3	$4.992	5	$6.200	5	$6.450
2	**ADPE and Telecom Equipment >= $.250M**	**0**	**$0.000**	**0**	**$0.000**	**0**	**$0.000**
	- Computer Hardware (Production)	0	$0.000	0	$0.000	0	$0.000
	- Computer Hardware (Network)	0	$0.000	0	$0.000	0	$0.000
	- Computer Software (Operating)	0	$0.000	0	$0.000	0	$0.000
	- Telecommunications	0	$0.000	0	$0.000	0	$0.000
	- Other Support Equipment	0	$0.000	0	$0.000	0	$0.000
3	**Software Development >= $.250M**	**1**	**$0.423**	**0**	**$0.000**	**0**	**$0.000**
	- Internally Developed	0	$0.000	0	$0.000	0	$0.000
	- Externally Developed	1	$0.423	0	$0.000	0	$0.000
4	**Minor Construction (>= $.250M and <= $2.000M)**	**0**	**$0.000**	**0**	**$0.000**	**2**	**$2.000**
	- Replacement Capability	0	$0.000	0	$0.000	0	$0.000
	- New Construction			0	$0.000	2	$2.000
	- Environmental Capability	0	$0.000	0	$0.000	0	$0.000
	Grand Total	**4**	**$5.415**	**7**	**$10.200**	**7**	**$8.450**
	Total Capital Outlays		**$1.873**		**$8.200**		**$8.500**
	Total Capital Investment Recovery		**$5.959**		**$6.695**		**$6.930**

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Department of the Navy/ Depot Maintenance	#001 - Non-ADP Equipment						Marine Corps Depots		
	FY 2018			FY 2019			FY 2020		
Non-ADP Equipment	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Vehicles	0	-	$0	0	-	$0	0	-	$0
Material Handling	0	-	$0	0	-	$0	0	-	$0
Installation Security	0	-	$0	0	-	$0	0	-	$0
Quality Control/ Testing	0	-	$0	0	-	$0	0	-	$0
Medical Equipment	0	-	$0	0	-	$0	0	-	$0
Machinery	0	-	$0	2	2,000	$4,000	0	-	$0
Support Equipment	3	1,664	$4,992	5	1,240	$6,200	5	1,290	$6,450
Total	3	1,664	$4,992	7	1,457	$10,200	5	1,290	$6,450

Justification:

Machinery:
FY 2019:
Laser Cutting Machine (PPB) $1,300K- Production Plant Barstow has instituted best business practices to improve production, scheduling, quality, and repair cycle time to support the Marine Corps' efforts to repair and overhaul systems returning from theater. The size of the assets ranged from small components from 2" x 2" to assemblies 5' x 5' to our smallest vehicle 10' x 8' to our largest vehicle 13' x 32' 8'. We are currently using outdated fabrication technology (Punch Press). The cost of process time it takes to set up Punch Press and post process parts in the Sheet Metal Shop would be dramatically reduced with the introduction of a new laser.

Additive Manufacturing Equipment - (PPA) - $2,700K MDMC intends to procure and install metal 3D printing technology at Production Plant. This technology has the ability to reduce lost production time incurred while waiting on part deliveries. Material costs can also be reduced as we will be able to print many parts rather than purchasing through normal acquisition means. While the scale of this technology is increasing every day, MDMC intends to acquire a small, proven version of this capability. Our intent is to print some of the smaller parts that typically have long lead times and/or high costs. Having this technology in house will also enhance research & development capability as well as enable us to produce intricate parts that are impossible or time consuming to fabricate with conventional machining methods.

Support Equipment:
FY 2018

Inline/Crossdrive Trans Upgrade (PPB) $1,192K - Production Plant Barstow (PPB)'s current and projected workloads for transmission dynamometer testing requires replacement of the Transmission Dynamometer Test Cell. Transmission Dynamometers that we currently have are 11 to 15 years old, thereby outliving their peak efficiency years. PPB is experiencing numerous breakdowns which significantly affects our throughput and schedule. This project was reprogrammed.

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50Cal Function Fire Range (PPA) $1,922K – PPA currently utilizes a single lane, 100 meter tube that is 5 feet in diameter for all accuracy and function fire testing of small arms up to and including the 50cal M2A1 machine gun. Due to current and future projected workload, PPA requires a separate range to perform function fire testing to prevent delays in production and reduce repair cycle time (RCT). The single range not only causes delays in production, but is also not ideal for function fire testing of weapons. Function fire testing requires many more rounds than accuracy testing and additional steps must be taken to ensure safe operation at the current range. The current range works well for accuracy testing but is not suited for function fire testing. Function fire testing at the current range causes premature wear to the bullet trap and the ventilation system. Occasionally, endurance tests are required for some weapons which involves several thousand rounds to be fired. This not only causes delays in other weapon testing but prematurely wears equipment in the range. Production delays are also incurred due to the many weapon mount changeovers that must be done with only one firing lane available. The proposed new range will consist of two firing lanes which will not only increase efficiency but provide a much safer method of function firing weapons.

Viper T (MDMC) $1,879K - The MDMC has a requirement to procure Virtual Instrument Portable Equipment Repair/Tester (VIPER/T) and VIPER/T Electro-Optical (VEO2) Subsystems to support the organic maintenance of multiple weapon system platforms. This project was reprogrammed.

FY 2019:

B2203 Transmission Dyno (PPA) $1,250K – The MDMC (PPA) has instituted best business practices to improve production scheduling, quality, and RCT. The proposed dynamometer will replace an older unit that is beyond its useful service life. Maintenance costs on the existing unit continue to increase and the antiquated control system is becoming more difficult to maintain due to obsolete parts.

Portable Hull Rotator (PPA) $1,900K - The MDMC is committed to employing the latest technologies and optimize our production areas as a part of the Depot of the 21st Century Initiatives. The PPA has instituted best business practices to improve production scheduling, quality, and RCT while maintaining focus on safety and ergonomics. Ground combat vehicle hulls worked at PPA require up to 2.25 miles of non-value added movement between the weld shops and the main craneway to accommodate positioning of the hull for various stages of the welding process. A conservative estimate of the non-value added man-hours required for these movements is 30 per hull. The weld shops do not have overhead crane/hoist capability to handle the hulls nor the overhead clearance to install such equipment. Hulls are brought to the weld shops on transport trailers and eventually must be removed by material handling personnel, transported to the main craneway to be flipped upside down and then returned to the weld shop. This process often has to be repeated multiple times for the same hull. Even with this non-value added labor welding personnel are still required to weld overhead and work off of platforms. The current operation to "flip" these hulls is deemed a critical lift which is dangerous and puts material handling personnel at risk and also increases the chances for hull damage. The proposed solution will equip transport trailers with built-in head and tailstock mechanisms to allow the hulls to be safely positioned as needed thus eliminating the need for additional material handling labor and wait time for weld shop personnel.

Oven Expansion (PPB) $1,100K – The MDMC (PPB) has instituted best business practices to improve production scheduling, quality, and RCT with the state of the art technology as a part of the Depot of the 21 Century Initiatives. Workload has increased to support the Marine Corps operating forces war against terrorism and worldwide commitments requiring production areas to be optimized to meet and support requirements. Our existing paint curing ovens and single rail conveyor / monorail systems are not sufficient to keep up with production demands. Paint curing time is a bottleneck in the painting process, which adversely affects the paint shop's daily operations and their abilities to meet production schedules. The new industrial paint curing oven and monorail systems would enable the paint shop to increase throughput of components for AAV's, LAV's, LVSR's, MATV's, and MRAP vehicles along with other principle end items by 300 percent.

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Renovate Blast Booth B565 (PPB) $1,600K - Presently, MDMC PPB's Blast Booth facility; East and West Bay, are the largest vehicle blast booths which are a critical part of the depot repair process for the Marine Corp's largest combat vehicles. Safety and health hazards exist in this facility that could expose PPB to unnecessary liabilities. Environmental hazards must be addressed to prevent leakage of blast media in the system. Each infraction from Mojave Air Quality Management District (MDAQMD) is at a minimum $25,000 per day. The Blast Booths have experienced extensive mechanical failure causing long delays and work stoppages. This negatively impacts our ability to meet schedule requirements of Marine Corps workload. Floor grates and augers are inadequate and damaged. They should be replaced with heavy duty industrial grade grates and augers. Elevator, blast pots and dust collectors need to be repaired or replaced. Air Compressors, plenums and dryers need to be overhauled to maintain optimum performance. Blast booth structures have been seriously degraded from heavy usage and in need of repair. Lighting is poor and should be upgraded to better illuminate work area. This upgrade to our B565 Blast Booth facility will increase the efficiency and the service life of the equipment, and will remedy the safety, environmental and productivity related issues.

Power Supply Tester (PPA) $350K – The MDMC PPA has instituted best business practices to improve production scheduling, quality, and RCT. The proposed equipment will accommodate operational testing and repair for power supplies and other electrical components for the AN/TRC-170 Communications System, as well as other secondary depot reparable master work schedule lines for the Marine Corps. MDMC currently has only one such tester and the master work schedule for these communication systems is doubling. A second unit is needed to maintain production and meet schedule. Production is already experiencing delays with components awaiting testing and creating a bottleneck in the repair process.

FY 2020:

Cold Spray Equipment (MDMC) $2,000K - The MDMC has instituted best business practices to improve production scheduling, quality, and RCT. MDMC is committed to employing the latest technologies and optimizing our production areas to offer the best value to the Marine Corps. MDMC intends to procure and install cold spray technology at PPA and PPB. This technology will allow MDMC to repair multiple parts that are typically thrown away and replaced with new parts. This technology has the ability to reduce lost production time incurred while waiting on part deliveries. Material costs can also be reduced as MDMC begins to repair many parts rather than discarding them and purchasing new parts through normal acquisition means. Cold spray technology allows the original physical and chemical properties of the material to remain intact as heating of the substrate is minimal. Advantages of this technology include uniform and high density/hardness of coatings, minimum surface preparation, low energy consumption and no toxic wastes. MDMC could benefit from this technology by using it to repair several parts on ground combat vehicles including, but not limited to several identified AAV parts that typically have corrosion damage.

Renovate Blast Booth B569 (PPB) $700K - Presently, MDMC Barstow's Vehicle Blast facility which resides in Building 569 is in dire need of renovation. Safety and health hazards exist in this facility that could expose PPB to unnecessary liabilities such as OSHA and EPA fines. The current blast facility is a single vehicle blast booth with an equipment room and is the oldest blast booth in the PPB inventory. The blast booth is a pre-fabricated steel building with two sliding doors, three single personnel doors in the main blast area, a single personnel door and a rollup door are located in the equipment room. Blast Booth equipment consists of a media floor recovery with dust collector, an elevator system, two media blast pots, an air compressor and air dryer and a breathable air system. Due to the age of and design, the blast booth is ineffective in containing blast media. This presents an environmental hazard that must be addressed.

Crossdrive Transmission Upgrade (PPB) $2,000K - The PPB's current and projected workloads for transmission dynamometer testing requires replacement of the Transmission Dynamometer Test Cell. Transmission Dynamometers that we currently have are 11 to 15 years old, thereby outliving their peak efficiency years. PPB is experiencing numerous breakdowns and that significantly affects our throughput and schedule. The current and projected transmission workloads demand a testing rate, which exceeds the overall productive output capacity of the current transmission dynamometer test facility. Replacement of Transmission Dynamometer's can increase throughput by 50%.

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B566 Crane Modernization (PPB) $500K – The PPB has instituted best business practices to improve production scheduling, quality, and RCT. Work load has increased to support the Marine Corps effort for Enduring Freedom, the war against terrorism and worldwide commitments requiring production areas to be optimized to meet and support requirements. The existing bridge crane within Building 566 is not sufficient to keep up with production demands. When tested, this crane strains to lift its capacity load and is not always successful on its first attempt. Steps must be taken and plans made to replace the existing crane before it fails all together, impacting both safety and production schedules. A new crane system would enable Cost Work Center (CWC) 281 personnel to work safely while increasing throughput of larger end items which include, but are not limited to AAV's, LAV's, LVSR's, MATV's, and MRAP vehicles.

Automated Component Blast Equipment (PPA) $1,250K – The PPA has instituted best business practices to improve production scheduling, quality, and RCT. MDMC is committed to employing the latest technologies and optimize our production areas as a part of the Depot of the 21 Century Initiatives to offer the best value to the Marine Corps. The existing blasting operations consist of palletized components loaded into the blast bays where personnel clean/blast each piece manually. Several blast cabinets are also utilized throughout the production plant that require personnel to manually load and process one part at a time. The proposed system will allow for multiple parts to be fed and blasted simultaneously, thereby reducing non-value added labor costs for material handling and reducing required man-hours in our blasting operations.

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Department of the Navy/ Depot Maintenance	#003 - Software Development						Marine Corps Depots		
	FY 2018			FY 2019			FY 2020		
Software	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Internally Developed	0	-	$0	0	-	$0	0	-	$0
Externally Developed	1	423	$423	0	-	$0	0	-	$0

Justification:

Externally Developed:

FY 2018

MRO Software – (MDMC - PPA & PPB) - $423K - Marine Depot Maintenance Command (MDMC) has instituted best business practices to improve production scheduling, quality, and RCT. MDMC's current shop floor control tool is JDA's Networks Make-To-Order (Networks MTO). Networks MTO was designed for manufacturing environment vs repair/overhaul environment. Therefore, there is a lot of functionality in Networks MTO that we do not utilize. JDA's Maintenance, Repair and Overhaul (MRO) fits more in line with the way we do business. The application is a smaller subset of modules more in line with the way we conduct business. Networks MTO does not have true multi-plant functionality, whereas, MRO does. MRO multi-plant functionality would allow the Program Management Department (PMD) and Material Management Department (MMD) to create processes that can be shared between both plants.

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Department of the Navy/ Depot Maintenance	#004 - Minor Construction						Marine Corps Depots		
	FY 2018			FY 2019			FY 2020		
Minor Construction	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Replacement	0	-	$0	0	-	$0	0	-	$0
New Construction		-		0	-	$0	2	1,000	$2,000
Environmental Capability	0	-	$0	0	-	$0	0	-	$0
Total	0	-	$0	0	-	$0	2	1,000	$2,000

Justification:

New Construction:

FY2020:

Optics Sighting Facility (PPB) $1,000K – This project is based on projected increased workload resulting from the Marine Corps efforts to repair and overhaul systems returning from the operating forces and from theater. This requires worldwide commitments requiring production areas be optimized to meet support requirements. The length of the assets range from approximately 2'x 2' in length to 3' x 3' in length on multiple vehicles and assets (LAV & M777) which has the greatest variance of any being worked in the facility. Due to the length and maneuverability of the assets, they are currently worked in the elements with minimal coverage in two different locations. The size of the work area negatively affects the RCT and causes rework. The small work area limits the activities that can take place under sunshades. Hours are wasted moving assets into an uncovered area to access the vehicle with no fall protection. Furthermore, the minimum availability of utilities and adequate cover delays completion repair/installation tasks and ultimately the completion of the assets. The proposed site currently contains two sunshades covering approximately 1,000 SF. Given the extremely high temperatures (110°F+) during summer months work is forced to slow/stop due to the extreme outdoor temperatures for personnel and limiting work that can be performed on assets/components/material with temperatures greater than 120°F. The covered area is not large enough to meet production demands and the old sun shades require routine maintenance to prevent them from becoming a safety hazard since they are exposed to the elements. The proposed structure will be constructed with pre-engineered steel framing and reinforced concrete support column footers, 3 bay doors and 2 hanger doors. The structure will be equipped with high-bay LED lighting, fire suppression, utilities and will provide approximately 4,225 SF of coverage.

Paint Prep Clear Span (PPB) $1,000K - Production Plant Barstow has instituted best business practices to improve production, scheduling, quality, and RCT. To support Marine Corps efforts to repair and overhaul systems returning from theater. The size of the assets range from small components from 2" x 2" to assemblies 5' x 5' to our smallest vehicle 10' x 8' to our largest vehicle 13' x 32' 8'. Due to the size, maneuverability and number of the assets, it is currently staged in the elements with minimal coverage in 2 different locations (east side of B634 and west of B634). The size and location of the work area negatively affects the RCT and is a cause of rework and excessive unneeded movement. The work area has a limited amount of sunshades that are at the end of their useful life cycle. Furthermore, the minimum availability of adequate cover delays the completion of repair/installation tasks and ultimately the completion of the assets. The proposed site (west of B634) currently contains 15 sunshades. Given the extremely high temperatures (110°F+) and monsoon rains during summer months, work is forced to slow/stop due to the extreme outdoor conditions for personnel limiting work that can be performed on assets/components/material. The covered area is not large enough to meet production demands and the old sun shades require routine maintenance to prevent them from becoming a safety hazard since they are exposed to the elements. The proposed structure will be constructed with pre-engineered steel framing and reinforced concrete support column footers and 6 bays. The structure will be equipped with high-bay LED lighting and utilities and provide approximately 4,800 SF of coverage.

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CAPITAL BUDGET EXECUTION
DEPARTMENT OF THE NAVY
DEPOT MAINTENANCE - MARINE CORPS DEPOTS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

FY	Line Item	Category	Capability/Project	Initial Request	Current Proj Cost	Approved Change	Explanation
2018	**1**	**Non ADP**		**$4.730**	**$4.992**	**$0.262**	
			Machinery	$0.880	$0.000	($0.880)	
			Support Equipment	$3.850	$4.992	$1.142	Inline Cross-Drive Trans Upgrade cost was $234K less than planned. 50 Cal Function Fire Range was $942K above plan. Viper T was $11K less than planned.
	2	**ADP**		**$0.000**	**$0.000**	**$0.000**	
	3	**Software**		**$0.000**	**$0.423**	**$0.423**	
			Externally Developed	$0.000	$0.423	$0.423	Added MRO Software to support Depot of 21st Century Initiative.
	4	**Minor Construction**		**$0.990**	**$0.000**	**($0.990)**	
			New Construction	$0.990	$0.000	($0.990)	
TOTAL FY 2018 CIP Program				**$5.720**	**$5.415**	**($0.305)**	

FY	L.I.	Category	Capability/Project	I.R	C.P.R	A.C.	Explanation
2019	**1**	**Non ADP**		**$10.200**	**$10.200**	**$0.000**	
			Machinery	$0.000	$4.000	$4.000	Re-programmed to include Laser Cutting Machine and 3D Printer.
			Support Equipment	$10.200	$6.200	($4.000)	Reprogrammed to remove the Hull Blast System. Current projects: B2203 Transmission Dyno; Portable Hull Rotator; Oven Expansion; Renovate Blast Booth B565; Power Supply Tester
	2	**ADP**		**$0.000**	**$0.000**	**$0.000**	
	3	**Software**		**$0.000**	**$0.000**	**$0.000**	
	4	**Minor Construction**		**$0.000**	**$0.000**	**$0.000**	
TOTAL FY 2019 CIP Program				**$10.200**	**$10.200**	**$0.000**	

FY	L.I.	Category	Capability/Project	I.R	C.P.R	A.C.	Explanation
2020	**1**	**Non ADP**		**$6.450**	**$6.450**	**$0.000**	
			Support Equipment	$6.450	$6.450	$0.000	Cold Spray Equipment ; Renovate Blast Booth; Crossdrive Transmission Upgrade ; B566 Crane Modernization ; Automated Component Blast Equipment to support current operating tempo and future reqmts
	2	**ADP**		**$0.000**	**$0.000**	**$0.000**	
	3	**Software**		**$0.000**	**$0.000**	**$0.000**	
	4	**Minor Construction**		**$2.000**	**$2.000**	**$0.000**	
			New Construction	$2.000	$2.000	$0.000	Optics Sighting Facility; Paint Prep Clear Span
TOTAL FY 2020 CIP Program				**$8.450**	**$8.450**	**$0.000**	

CARRYOVER RECONCILIATION
DEPARTMENT OF THE NAVY
DEPOT MAINTENANCE - MARINE CORPS DEPOTS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	FY 2018	FY 2019	FY 2020
Part 1			
1. Net Carry-In	144.6	163.7	156.6
2. Revenue	360.1	433.0	385.9
3. New Orders	379.2	425.9	353.0
4. Exclusions:			
Foreign Military Sales	18.5	1.8	1.8
Base Realignment and Closure	0.0	0.0	0.0
Other Federal Department and Agencies	1.8	4.6	4.6
Non-Federal and Others	0.0	0.0	0.0
Institutional Major Range & Test Facility Base	0.0	0.0	0.0
OUSD(C) Approved Carryover Waiver	0.0	0.0	0.0
5. Orders for Carryover Calculation	358.9	419.6	346.7
6. Weighted Average Outlay Rate	58.9%	60.0%	60.0%
7. Carryover Rate	41.1%	40.0%	40.0%
8. Allowable Carryover	151.4	172.8	141.7
Allowable Carryover(First Year)	147.5	167.8	138.7
Allowable Carryover (Second Year Procurement-funded Orders)	3.9	5.0	3.0
Part II			
9. Balance of Customer Order at Year End	163.7	156.6	123.8
10. Work-in-progress	0.8	0.9	0.9
11. Exclusions:			
Foreign Military Sales	14.3	5.5	2.5
Base Realignment and Closure	0.0	0.0	0.0
Other Federal Department and Agencies	1.3	1.8	2.3
Non-Federal and Others	-0.2	-0.2	-0.2
Institutional Major Range & Test Facility Base	0.0	0.0	0.0
OUSD(C) Approved Carryover Waiver	0.0	0.0	0.0
12. Calculated Actuals Carryover	147.5	148.7	118.2

Some totals may not add due to rounding.
EXWC,NSWC,NUWC,NAWCDIV,SPAWAR,NRL use RDTEN rates.

MATERIAL INVENTORY DATA
DEPARTMENT OF THE NAVY
DEPOT MAINTENANCE - MARINE CORPS DEPOTS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

PY

			----- Peacetime -----	
	Total	Mobilization	Operating	Other
Material Inventory BOP	$ 64.5	$ 0.0	$ 64.5	$ 0.0
Purchases				
A. Purchases to Support Customer Orders	$ 116.9	$ 0.0	$ 116.9	$ 0.0
B. Purchase of long lead items in advance of customer orders	0.0 0.0	0.0	0.0	0.0
C. Other Purchases (List)	0.0	0.0	0.0	0.0
D. Total Purchases	$ 116.9	$ 0.0	$ 116.9	$ 0.0
Material Inventory Adjustments				
A. Material Used in Maintenance	$ 112.3	$ 0.0	$ 112.3	$ 0.0
B. Disposals, theft, losses due to damages	0.0	0.0	0.0	0.0
C. Other reductions (List)	0.0	0.0	0.0	0.0
D. Total inventory adjustments	$ 112.3	$ 0.0	$ 112.3	$ 0.0
Material Inventory EOP	$ 69.1	$ 0.0	$ 69.1	$ 0.0

CY

			----- Peacetime -----	
	Total	Mobilization	Operating	Other
Material Inventory BOP	$ 69.1	$ 0.0	$ 69.1	$ 0.0
Purchases				
A. Purchases to Support Customer Orders	$ 98.9	$ 0.0	$ 98.9	$ 0.0
B. Purchase of long lead items in advance of customer orders	0.0 0.0	0.0	0.0	0.0
C. Other Purchases	0.0	0.0	0.0	0.0
D. Total Purchases	$ 98.9	$ 0.0	$ 98.9	$ 0.0
Material Inventory Adjustments				
A. Material Used in Maintenance	$ 105.8	$ 0.0	$ 105.8	$ 0.0
B. Disposals, theft, losses due to damages	0.0	0.0	0.0	0.0
C. Other reductions	0.0	0.0	0.0	0.0
D. Total inventory adjustments	$ 105.8	$ 0.0	$ 105.8	$ 0.0
Material Inventory EOP	$ 62.2	$ 0.0	$ 62.2	$ 0.0

MATERIAL INVENTORY DATA
DEPARTMENT OF THE NAVY
DEPOT MAINTENANCE - MARINE CORPS DEPOTS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

BY

	Total	----- Peacetime ----- Mobilization	Operating	Other
Material Inventory BOP	$ 62.2	$ 0.0	$ 62.2	$ 0.0
Purchases				
A. Purchases to Support Customer Orders	$ 111.6	$ 0.0	$ 111.6	$ 0.0
B. Purchase of long lead items in advance of customer orders	0.0	0.0		0.0
C. Other Purchases	0.0	0.0	0.0	0.0
D. Total Purchases	$ 111.6	$ 0.0	$ 111.6	$ 0.0
Material Inventory Adjustments				
A. Material Used in Maintenance	$ 115.6	$ 0.0	$ 115.6	$ 0.0
B. Disposals, theft, losses due to damages	0.0	0.0	0.0	0.0
C. Other reductions	0.0	0.0	0.0	0.0
D. Total inventory adjustments	$ 115.6	$ 0.0	$ 115.6	$ 0.0
Material Inventory EOP	$ 58.2	$ 0.0	$ 58.2	$ 0.0

DEPOT MAINTENANCE SIX PERCENT CAPITAL INVESTMENT PLAN
DEPARTMENT OF THE NAVY
DEPOT MAINTENANCE - MARINE CORPS DEPOTS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	REVENUE (Maintenance, Repair, Overhaul) 3 year average			**BUDGETED CAPITAL** (Modernization, Efficiency)		
	FY 15-17	FY 16-18	FY 17-19	FY 2018	FY 2019	FY 2020
	572.6	469.1	382.2			
	469.1	382.2	360.1			
	382.2	360.1	433.0			
Revenue (Avg)	474.6	403.8	391.8			
Working Capital Fund (Avg)	474.6	403.8	391.8			
Appropriations (Avg)	0.0	0.0	0.0			
Total Revenue (Avg)	474.6	403.8	391.8			
WCF Depot Maintenance Capital Investment						
Facilities/ Work Environment				14.9	16.2	18.7
Equipment				5.4	10.2	8.5
Equipment (Non-Capital Investment Program)				0.6	2.2	1.5
Processes				0.0	0.0	0.0
Total WCF Investment				20.9	28.6	28.7
Appropriated Funding - List by Appropriation						
MILCON				20.8	31.9	0.0
Procurement				6.0	1.5	0.0
Operation & Maintenance				0.0	0.0	0.0
Total Appropriated Funding				26.8	33.4	0.0
Component Total				47.7	62.0	28.7
Minimum 6% Investment				28.5	24.2	23.5
Investment Over/Under Requirement				19.2	37.8	5.2
				10.0%	15.4%	7.3%

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3. Naval Air Warfare Center

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NARRATIVE
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL AIR WARFARE CENTER
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Mission Statement / Overview:
The Naval Air Warfare Center (NAWC) provides research, development, test, evaluation and sustainment for all the Navy and Marine Corps aircraft and systems. NAWC also operates test ranges, test facilities, laboratories and aircraft in support of military operations worldwide. This includes a full spectrum Research, Development, Test, and Evaluation (RDT&E); in-service engineering; aircraft weapons integration; assigned airborne electronic warfare systems; naval aircraft engines; avionics; aircraft support systems; weapons systems associated with air warfare; missiles and missile subsystems; RDT&E, acquisition and life cycle support of training systems; and to maintain and operate the air, land, and sea test ranges complex. Major Range Test Facility Base (MRTFB) funding (RDT&E appropriation) is received by the NAWC to maintain and support designated range facilities.

Activity Group Composition:
The Warfare Center is comprised of two operating divisions whose operations and locations are described below.

AIRCRAFT DIVISION (AD): Provides design, development, evaluation, verification, fielding and in-service engineering support for the Navy's Aircraft Launch and Recovery system and aircraft, target and weapon support equipment. This is the center for full spectrum research, development, test and evaluation of Fleet Unmanned Aircraft Systems (UAS) platforms from Group 1 through 5 including launch and recovery, control systems, data and communications links, mission sensor packages, airspace integration, weapon integration, interoperability and autonomy. Naval Air Warfare Center Aircraft Division (NAWCAD) scientists and engineers provide the technical excellence to support the maritime engineering needs related to technology development, system acquisition, and product support of all naval aviation air vehicle engineering. This consists functional areas: air vehicle engineering, aeromechanics, structures, materials engineering, subsystems, and aerial vehicle engineering science and technology. NAWCAD's air vehicle modification and instrumentation division provides the Navy expert capability in design, production, prototype support and instrumentation systems for all naval air vehicles and airborne weapons systems. The United States Naval Test Pilot School trains the world's finest developmental test pilots, flight officers, engineers, industry and foreign partners in full spectrum test and evaluation of aircraft and aircraft systems. The primary location at Patuxent River, MD, and supporting operating sites in St. Inigoes, MD, Lakehurst, NJ, and Orlando, FL.

WEAPONS DIVISION (WD): A center of excellence in weapons development for the Department of the Navy. Delivers unparalleled weapons research, development, acquisition, test and evaluation for our nation's warfighters, and offer 24/7 warfighter support to ensure the on-the-ground service member has the support needed to defend our nation at home and at sea. The China Lake, CA site operates more than 1.1 million acres of land ranges and multiple weapons

development laboratories for the Navy. The Point Mugu, CA site serves as the Navy's Electronic Warfare Technical Center. Naval Air Warfare Center Weapons Division (NAWCWD) operates in two locations: China Lake, CA and Point Mugu, CA.

Significant Changes Since the FY 2019 President's Budget:
The FY 2020 budget estimate includes increases in the civilian workforce to match projected workload. These increases are attributable to the additional efforts required to support the following programs: Support/Commercial Derivative Aircraft Program; Anti-Submarine Warfare and Training Support; Aircraft Launch and Recovery Equipment; and F/A-18, E/A-18G, and Joint Strike Fighter programs.

Financial Profile:

Orders/Revenue/Expense/Operating Results ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Orders	$5,118.3	$5,036.8	$5,088.1
Revenue	$4,920.1	$5,002.4	$5,055.3
Expense	$4,926.2	$5,015.6	$5,042.7
Operating Results	($6.2)	($13.2)	$12.6
Capital Surcharge	$0.0	($9.1)	$0.0
Net Operating Results (NOR)	($6.2)	($22.3)	$12.6
Prior Year AOR	$15.9	$9.7	
Other Changes Affecting AOR	$0.0	$0.0	$0.0
Accumulating Operating Result (AOR)	$9.7	($12.6)	$0.0

Some totals may not add due to rounding.

Orders, Revenue and Expense: Changes in orders from FY 2018 to FY 2020 are based on updated new orders estimates as coordinated with customers. Contributing to the change in revenue and expense from FY 2018 to FY 2020 are changes in civilian labor estimates required to support anticipated customer workload. Other changes to revenue and expense are a result of inflation and pricing.

Collections/Disbursements/Outlays ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Collections	$4,925.5	$4,964.9	$4,993.7
Disbursements	$4,912.9	$5,015.0	$5,026.0
Net Outlays	($12.6)	$50.1	$32.3

Some totals may not add due to rounding.

NARRATIVE
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL AIR WARFARE CENTER
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Budgeted collections and disbursements are based on revenue, cost, and Capital Investment Program (CIP) outlay estimates.

Workload:

Direct Labor Hours (000):	**FY 2018**	**FY 2019**	**FY 2020**
Current Estimate	20,436	21,280	21,592

Direct Labor Hours: The rates are based on Direct Labor Hours (DLHs) required for stabilized workload. The changes in direct labor hour estimates relate to supporting customer workload efforts and growth in hours due to one more workday in FY 2020.

Performance Indicators: Unit cost serves as a primary performance indicator and represents the average cost of delivering goods and services to our customers.

Unit Cost:	**FY 2018**	**FY 2019**	**FY 2020**
Total Stabilized Cost ($Millions)	$1,951.64	$2,080.95	$2,079.95
Workload (DLHs) (000)	18,173	18,302	17,996
Unit cost (per DLH)	$107.39	$113.70	$115.58

Unit Cost is the method established to authorize and control costs. Unit cost goals allow activities to respond to workload changes in execution by encouraging reduced costs when workload declines and allowing appropriate increases in costs when customers request additional services.

Stabilized / Composite Rates:	**FY 2018**	**FY 2019**	**FY 2020**
Stabilized Rate	$113.93	$113.36	$116.32
Change from Prior Year		-0.50%	2.61%
Composite Rate Change		0.89%	2.25%

Rates are based on DLHs required for anticipated workload. The Stabilized Rate consists of direct labor and applied overhead. Unique direct non-labor costs are billed on a reimbursable basis to the customer. The composite rate change incorporates both the stabilized costs and the reimbursable costs. The composite rate change in FY 2020 reflects adjustments to direct workload, pricing changes, and increases in Naval Innovative Science and Engineering (NISE) funding to comply with 10 USC 2363.

NARRATIVE
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL AIR WARFARE CENTER
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Staffing:

Civilian/Military ES & Workyears:	**FY 2018**	**FY 2019**	**FY 2020**
Civilian End Strength	16,785	16,644	16,644
Civilian Workyears (straight time)	15,807	16,218	16,356
Military End Strength	219	187	195
Military Workyears	164	159	168

Civilian Personnel: Civilian strength levels, measured by both end strength and full-time equivalents (FTEs) remain steady in FY 2020. This is a projection of civilian resources required to fulfill customers' orders. Civilian resource estimates have been adjusted to reflect a balanced program of civilian resources to funded workload.

Military Personnel: Projection of military personnel necessary to fulfill programming objectives and coordination with customers. Military resource estimates have been adjusted to reflect a balanced program of military resources to funded workload.

Capital Improvement Program (CIP) Authority ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Equipment, Non-ADP / Telecom	$31.0	$36.9	$16.6
Equipment, ADPE / Telecom	$7.7	$9.0	$9.0
Software Development	$4.6	$2.6	$0.0
Minor Construction	$9.7	$8.9	$22.7
Total	$53.0	$57.4	$48.4

Some totals may not add due to rounding.

The investment in capital assets will acquire affordable and technically efficient capabilities to support customer requirements. Minor construction includes projects meeting the criteria of the Defense Laboratory Revitalization Program (LRP). The projects will replace aging temporary buildings and upgrade and expand lab capability to accommodate workload growth and increase efficiency. CIP authority budgeted in accordance with capital investment recovery guidelines, in addition CIP funds have been realigned to support vital LRP projects.

Carryover Compliance ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Net Carry-In	$2,458.4	$2,656.7	$2,691.1
Allowable Carryover	$2,503.9	$2,442.3	$2,504.1
Calculated Actual Carryover	$2,246.3	$2,127.0	$2,025.5
Delta (Actual-Allowable): Above Ceiling (+)/Below Ceiling (-)	($257.5)	($315.3)	($478.6)

Some totals may not add due to rounding.

Carryover for each year is within the allowable ceiling target amount.

REVENUE AND EXPENSES
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL AIR WARFARE CENTER
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	FY 2018	FY 2019	FY 2020
Revenue:			
Gross Sales			
Operations	4,889.5	4,945.0	5,007.0
Capital Surcharges	0.0	9.1	0.0
Capital Investment Recovery	30.6	48.4	48.4
Other Income			
Total Income	4,920.1	5,002.4	5,055.3
Expenses			
Cost of Materiel Sold from Inventory			
Salaries and Wages:			
Military Personnel Compensation & Benefits	16.2	13.7	14.4
Civilian Personnel Compensation & Benefits	2276.7	2370.7	2399.2
Travel and Transportation of Personnel	90.7	75.0	74.2
Material & Supplies (Internal Operations)	497.3	528.2	530.1
Equipment	131.8	59.1	60.8
Other Purchases from NWCF	86.9	112.8	114.2
Transportation of Things	9.7	7.3	7.3
Capital Investment Recovery	30.6	48.4	48.4
Printing and Reproduction	0.1	0.9	0.9
Advisory and Assistance Services	0.2	0.2	0.2
Rent, Communication, Utilities & Misc Charges	48.8	68.4	70.1
Other Purchased Services	1737.3	1730.9	1722.9
Total Expenses	4926.2	5015.6	5042.7
Work in Process Adjustment	0.0	0.0	0.0
Comp Work for Activity Retention Adjustment	0.0	0.0	0.0
Cost of Goods Sold	4926.2	5015.6	5042.7
Operating Result	-6.2	-13.2	12.6
Adjustments Affecting NOR	0.0	-9.1	0.0
Capital Surcharges	0.0	-9.1	0.0
Extraordinary Expenses Unmatched	0.0	0.0	0.0
Other Changes Affecting NOR (All Others)	0.0	0.0	0.0
Net Operating Result	-6.2	-22.3	12.6
PY AOR	15.9	9.7	-12.6
TOTAL AOR	9.7	-12.6	0.0
Non-Recoverable Adjustments impacting AOR	0.0	0.0	0.0
AOR for budget purposes	9.7	-12.6	0.0

SOURCES OF NEW ORDERS & REVENUE
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL AIR WARFARE CENTER
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	FY 2018	FY 2019	FY 2020
1. New Orders	5,118.3	5,036.8	5,088.1
a. Orders from DoD Components:	4,669.7	4,574.1	4,698.3
Department of the Navy	4100.3	4104.4	4317.5
O & M, Navy	770.8	710.8	776.0
O & M, Marine Corps	46.3	30.2	30.6
O & M, Navy Reserve	2.5	0.5	0.4
O & M, Marine Corp Reserve	0.0	0.0	0.0
Aircraft Procurement, Navy	941.9	1,043.0	1,048.6
Weapons Procurement, Navy	73.9	76.1	82.0
Ammunition Procurement, Navy/MC	20.2	29.2	33.0
Shipbuilding & Conversion, Navy	108.9	102.3	103.5
Other Procurement, Navy	272.4	251.3	339.1
Procurement, Marine Corps	27.0	16.2	24.3
Family Housing, Navy/MC	0.0	0.1	0.1
Research, Dev., Test, & Eval., Navy	1,836.0	1,844.2	1,879.2
Military Construction, Navy	0.0	0.5	0.5
National Defense Sealift Fund	0.1	0.0	0.0
Other Navy Appropriations	0.4	0.0	0.0
Other Marine Corps Appropriations	0.0	0.0	0.0
Department of the Army	64.6	77.5	63.7
Army Operation & Maintenance	36.7	38.8	25.0
Army Res, Dev, Test, Eval	16.7	20.7	20.1
Army Procurement	10.4	17.2	17.9
Army Other	0.7	0.7	0.7
Department of the Air Force	250.5	167.1	142.4
Air Force Operation & Maintenance	45.3	41.5	30.1
Air Force Res, Dev, Test, Eval	147.6	80.0	71.0
Air Force Procurement	57.6	45.6	41.3
Air Force Other	0.0	0.0	0.0
DOD Appropriation Accounts	254.3	225.2	174.8
Base Closure & Realignment	0.0	0.0	0.0
Operation & Maintenance Accounts	74.6	67.6	43.9
Res, Dev, Test & Eval Accounts	119.2	95.8	80.5
Procurement Accounts	53.0	54.9	43.5
Defense Emergency Relief Fund	0.0	0.0	0.0
DOD Other	7.4	6.9	6.9
b. Orders from other Fund Activity Groups	104.1	82.4	63.7
c. Total DoD	4,773.8	4,656.5	4,762.0
d. Other Orders:	344.6	380.3	326.1
Other Federal Agencies	55.7	57.6	33.5
Foreign Military Sales	266.5	297.6	276.8
Non Federal Agencies	22.4	25.1	15.8
2. Carry-In Orders	2,458.4	2,656.7	2,691.1
3. Total Gross Orders	7,576.8	7,693.5	7,779.2
a. Funded Carry-Over before Exclusions	2,656.7	2,691.1	2,723.9
4. Revenue(-)	4,920.1	5,002.4	5,055.3
5. End of Year Work-In-Process (-)	0.0	0.0	0.0
6. FMS, BRAC, Other Federal, Non-Federal orders, and Inst. MRTFB (-)	410.3	564.1	698.4
7. Funded Carryover	2,246.3	2,127.0	2,025.5

Note: Line 5 (End of Year Work-In-Process) is adjusted for Non-DOD BRAC, FMS, and Institutional MRTFB

CHANGES IN THE COSTS OF OPERATIONS
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL AIR WARFARE CENTER
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	Costs
FY 2018 Actuals	**4,926.2**
FY 2019 President's Budget:	**4,699.0**
Estimated Impact in FY 2019 of Actual FY 2018 Experience:	**12.2**
Pricing Adjustments:	**31.4**
Civilian Personnel	11.6
Fuel Price	15.7
General Purchase Inflation	4.0
Program Changes:	**240.3**
Support/Commercial Derivative Aircraft Program	33.4
Naval Sea Systems Command - ASW Support, Training Support, Ship Sel	32.5
Aircraft Launch and Recovery Equipment	17.8
F/A-18/EA-18G	26.5
Joint Strike Fighter	30.9
Aviation Support Equipment	10.3
Naval Undergraduate Flight Training System	8.0
Navy/MC Small Tactical Unmanned Air Systems	7.0
Heavy Lift Helicopter	6.8
Air Traffic Management Systems	6.6
Persistent Maritime Unmanned Aircraft Systems	5.5
Joint Advanced Vertical Lift Aircraft (V-22) Osprey	5.0
EA-6	4.9
Maritime Surveillance Aircraft Program	4.6
C-2/E-2 Program	4.2
Navy/MC Multi-Mission Tactical Unmanned Air System	3.8
Navy Unmanned Combat Air Systems	3.2
Direct and Time Sensitive Strike Program	2.9
Aircrew Systems Program	2.6
Strike Planning and Execution Systems	2.6
Cyber Security	2.6
Air Anti-Submarine Warfare Systems	1.7
Air Combat Electronics	1.6
Precision Strike Weapons Program	1.4
Next Generation Jammer	2.7
Electronic Warfare (EW) Dev	4.6
HARM Mods	1.4
AMRAAM	0.7
Weapons Range Support Equipment	2.9
(U)Advanced Tactical Unmanned Aircraft System	1.5
Other Changes:	**32.8**
Capital Investment Recovery	0.0
Facilities Sustainment, Restoration & Modernization	0.0
Depreciation	0.8
Financial Management Support	15.6
Section 219	11.0
Contracts Adjustment	5.3
FY 2019 Current Estimate:	**5,015.6**

CHANGES IN THE COSTS OF OPERATIONS
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL AIR WARFARE CENTER
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

FY 2019 Current Estimate:	**5,015.6**
Pricing Adjustments:	**50.7**
Annualization of Prior Year Pay Raises	**0.1**
Civilian Personnel	0.0
Military Personnel	0.1
FY 2020 Pay Raise	**0.3**
Civilian Personnel	0.0
Military Personnel	0.3
Fuel Price Changes	8.4
General Purchase Inflation	41.9
Other Price Changes (list)	**0.0**
Working Capital Fund Price Changes	0.0
Productivity Initiatives and Other Efficiencies:	**0.0**
Program Changes:	**7.2**
Other Changes:	**-30.8**
Capital Investment Recovery	0.0
Facilities Sustainment, Restoration & Modernization	0.4
Change in work days	0.0
FECA	0.0
Contracts Adjustment	-40.0
Fuel (program growth)	6.8
Section 219	2.0
Civilian Equivalency Rate Changes	0.0
FY 2020 Estimate:	**5,042.7**

CAPITAL INVESTMENT SUMMARY
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL AIR WARFARE CENTER
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

		FY 2018		FY 2019		FY 2020	
Line #	Description	Quantity	Total Cost	Quantity	Total Cost	Quantity	Total Cost
1	**Non-ADPE and Telecom Equipment >= $.500M**	**35**	**$30.995**	**30**	**$36.963**	**11**	**$16.634**
	- Quality Control/Testing	21	$17.192	16	$25.097	5	$8.463
	- Machinery	0	$0.000	2	$1.385	1	$0.700
	- Support Equipment	14	$13.803	12	$10.481	5	$7.471
2	**ADPE and Telecom Equipment >= $.500M**	**7**	**$7.694**	**9**	**$8.969**	**4**	**$9.014**
	- Computer Hardware (Production)	3	$2.273	2	$1.369	1	$2.874
	- Computer Hardware (Network)	3	$4.471	6	$5.900	3	$6.140
	- Computer Software (Operating)	1	$0.950	1	$1.700	0	$0.000
	- Other Support Equipment	0	$0.000	0	$0.000	0	$0.000
3	**Software Development >= $.500M**	**4**	**$4.645**	**3**	**$2.623**	**0**	**$0.000**
	- Externally Developed	4	$4.645	3	$2.623	0	$0.000
4	**Minor Construction (>= $.500M and <= $1.000M)**	**11**	**$9.728**	**3**	**$8.850**	**6**	**$22.702**
	- New Construction	11	$9.728	3	$8.850	6	$22.702
	Grand Total	**57**	**$53.062**	**45**	**$57.405**	**21**	**$48.350**
	Total Capital Outlays		**$47.007**		**$49.316**		**$37.505**
	Total Capital Investment Recovery		**$30.602**		**$48.350**		**$48.350**

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Department of the Navy/ Research and Development	#001 - Non-ADPE						Naval Air Warfare Center		
	FY 2018			FY 2019			FY 2020		
Non-ADP Equipment	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Vehicles	0	-	$0	0	-	$0	0	-	$0
Material Handling	0	-	$0	0	-	$0	0	-	$0
Installation Security	0	-	$0	0	-	$0	0	-	$0
Quality Control/ Testing	21	819	$17,192	16	1,569	$25,097	5	1,693	$8,463
Medical Equipment	0	-	$0	0	-	$0	0	-	$0
Machinery	0	-	$0	2	693	$1,385	1	700	$700
Support Equipment	14	986	$13,803	12	873	$10,481	5	1,494	$7,471
Total	35	886	$30,995	30	1,232	$36,963	11	1,512	$16,634

Justification:

PROJECTS ABOVE $1M:

FY 2018

DISTRIBUTED EW CAPABILITY

This project is to procure reliable Radio Frequency (RF) equipment baseline for RF Targets. The Weapons Division North Range is the navy's principal instrumented Test & Evaluation (T&E) range with RF radiating targets for live ordnance delivery and missile technology advancements. Advanced signal fidelity and remote control capability is required to meet the demand for testing the next generation of weapons. This project includes procuring emerging technologies in transmitters, waveguide, antennas, cables, controllers, pedestals, and test equipment. This project concurs with WD objective to "Improve customer engagement and satisfaction with a focus on NAWCWD program" and directly supports our next generation Electronic Warfare (EW) capability.

FOTS BLDG 33 TO CLPL

The existing China Lake fiber optic cable plant (FOTS) is 30 years of age and is at its end of life. The age of NAWCWD's cable plant leads to brittle glass making repairs very difficult/impossible and costly. The location and placement of the existing cable plant when installed 30 years ago leads to troublesome access for repair equipment due to current environmental concerns. Multiple catastrophic breaks through the years, in addition to antiquated splicing techniques, have degraded the available bandwidth of the fibers.

RDT&E HIGH SPEED CORE NETWORK

This project proposal is #1 of 3 separate but synergistic CIP proposals being submitted this year to implement a fundamental Weapons Division (WD) core Research Development Test & Evaluation (RDT&E) communication infrastructure upgrade at primary locations to meet current and future Integrated Warfare Capability / Live Virtual Construct (IWC/LVE) and Speed to Fleet communication requirements. This first of three proposals is for a high speed core network necessary to fundamentally incr3ase the network bandwidth and re-configuration capabilities of the unclassified and classified RDT&E networks.

150 GALLON MIXER UPGRADE

This project is an upgrade to the existing 150 Gallon Mixer to current industry design standards to increase reliability and safety and minimize downtime. Many design changes have been made that create a more robust mixing system during the last 5 decades. The current issues revolve around antiquated equipment that is still in use, past its functional life-cycle. Baker Perkins mixers have long used the Quad Lift system to provide a more robust lifting mechanism. Existing system will maintain bowl position even in the event of hydraulic failure. By upgrading selected equipment, our labs will require less maintenance.

WIND TUNNEL FORCE AND MOMENT BALANCE UPGRADE

This project supports the Advanced Aeromechanics Lab at NAWCAD. This CIP project will procure a new piece of equipment (six component external balances) that will support the wind test capability used for RDT&E of aircraft. Alternatives have been considered, however this project is the most cost effective solution for the government.

COMPUTED TOMOGRAPHY (CT) X-RAY NON DESTRUCTIVE INSPECTION (NDI)

This project will procure a new piece of equipment that will provides a new tool for materials engineering to conduct failure analysis versus the legacy method of destructive investigation of parts. The machine will also provide a unique capability to accurately qualify high value parts with complex topologies produced by advanced manufacturing methods. Alternatives have been considered, however this project is the most cost effective solution for the government.

FLUID ACTUATION CONTROLS TECHNOLOGY (FACT)

This project supports the Power and Propulsion Lab at NAWCAD. This CIP will procure equipment that will support fuel test capabilities used for RDT&E of aircraft. Alternatives have been considered, however this project is the most cost effective solution for the government.

AIRCRAFT SURVEILLANCE RADAR (ASR)

NAWCAD operates a ASR-8 radar that provides critical air hazard impact operations involving air and surface participants and/or weapon engagements, UAS surveillance coverage and track data needed for airspace management and range clearance for safe conduct of range operations in the Special Use Airspace (SUA) as required for their respective missions. This is critical for low altitude flight test operations/missions conducted in the eastern areas of Patuxent River OPAREAS (PXOA). This project will upgrade the outdated analog system on the radar to the existing standard digital system. Alternatives have been considered, however this project is the most cost effective solution for the government.

ADDITIVE MANUFACTURING POWDER BLOWN CAPABILITY

This project will allow the development of Capabilities that can be expanded across multiple Projects and fold into the Enterprise Qualification/Certification Solutions needed to Operationalize Additive Solutions. Alternatives have been considered, however this project is the most cost effective solution for the government.

FY 2019

DISTRIBUTED EW CAPABILITY

This project is to procure reliable Radio Frequency (RF) equipment baseline for RF Targets. The weapons Division North range is the Navy's principal instrumented Test & Evaluation (T&E) range with RF radiating targets for live ordnance delivery and missile technology advancements. Advanced signal fidelity and remote control capability is required to meet the demand for testing the next generation of weapons.

CHEMICAL PILOT PLANT MODERNIZATION

This project proposal is #1 of 2 separate but synergistic. This effort will modernize the Chemical Pilot Plant at the Energetics Materials Research and Processing Branch, code 477100D. The purpose is to update our chemical synthesis and scale up capabilities, expanding the types and modalities of chemical processes that can be performed on a pilot scale.

RDT&E HIGH SPEED CORE NETWORK

This project proposal is #2 of 3 separate but synergistic CIP Proposals being submitted this year to implement a fundamental Weapons Division (WD) core Research Development Test & Evaluation (RDT&E) communication infrastructure upgrade at primary locations to meet current and future Integrated Warfare Capability /Live Virtual Construct (IWC/LVC) and Speed to Fleet communications requirements.

ADVANCED PROPULSION & COMBUSTION RESEARCH LAB

The purpose of the Advanced Propulsion and Combustion Research Lab is to diversify our applied propulsion and combustion R&D capabilities to support future technology development programs such as the solid fueled ramjet. This includes renovation to the flow facility at 01371 to allow direct-connect and free-jet testing of advanced propulsion systems including cruise missile gas turbines, ramjets, and scramjets.

FARM GPS ANTI-JAM TESTING

The NAWCAD Radar and Antenna Systems Division conducts measurements of the characteristics of antenna systems and avionics systems installed on partial to full-size airframes. These measurements are conducted from outdoor ranges at the Facilities for Antenna and RCS Measurements (FARM). A GPS simulator is used for the RDT&E mission. The existing simulator is obsolete. This project will procure an upgraded GPS simulator which will address new testing capability needs which are driven by DoD mandates. Alternatives have been considered, however this project is the most cost effective solution for the government.

ENGINEERING PROTOTYPING FACILITY CNC LASER CUTTING MACHINE

The NAWCAD Engineering Prototyping Facility provides prototyping, sustainment, and reverse engineering support to customers. This project will procure a CNC Fiber Laser Cutting Machine to rapidly and efficiently produce parts for prototypes and sustainment of legacy systems. Alternatives have been considered, however this project is the most cost effective solution for the government.

HORIZONTAL ACCELERATOR BRAKING SLED

The NAWCAD Human Services Division operates a horizontal accelerator facility which is used to perform RDT&E by simulating a crash environment. The existing horizontal accelerator is over 30 years old and is in need of replacement. This project will provide a new horizontal accelerator for the Navy's sole crash test lab. Alternatives have been considered, however this project is the most cost effective solution for the government.

X-RAY PHOTOELECTRON SPECTROSCOPY

The NAWCAD Corrosion and Wear Laboratory provide capabilities for corrosion control and prevention research, fundamental materials degradation investigations, and fundamental electrochemical research. This project will provide a high-throughput X-ray photoelectron spectrometer that will assist in chemical surface analysis and characterization of current and emerging materials, including additive manufacturing (AM), batteries, and corrosion prevention materials. Alternatives have been considered, however this project is the most cost effective solution for the government.

ADVANCED DECK HANDLING TECHNOLOGY EVALUATION CENTER

The NAWCAD Robotics and Intelligence Systems Engineering Lab works to develop and mature ALRE/SE S&T solutions in robotics and intelligent systems with the goal of reducing manning requirements / workload and increasing safety / productivity for fleet personnel. This project will provide Robotic Emulation equipment for use with Deck Handling Technologies (DHT) to enable a New Capability for testing of current and future generation DHT with relevant sized systems, in relative environment conditions / parameters, and interaction scenarios. Alternatives have been considered, however this project is the most cost effective solution for the government.

MOBILE ENVIRONMENTAL CHAMBERS (MEC)

The NAWCAD Electrical Power Systems Evaluation Facility (EPSEF) and is a core capability for the Naval Power, Avionics, Thermal, & Hydraulic (NPATH) Laboratory. This project will provide 2 MEC's that will simulate altitude, temperature, and humidity conditions for qualification and reliability testing of rotating power system components according to MIL-G-21480 and MIL-STD-810 requirements. Alternatives have been considered, however this project is the most cost effective solution for the government.

SAIL NIFC-CA

The Surface/Aviation Interoperability Laboratory (SAIL) facility provides programs with an up front and early exposure to deployed naval systems and capabilities that provide risk reduction and cost efficiency for customers. This project will procure equipment with a new fire-control system, called Naval Integrated Fire Control – Counter Air, or NIFC-CA. Alternatives have been considered, however this project is the most cost effective solution for the government.

OCEAN HARVEST RADAR

Ocean Harvest is an organically developed capability internal to NAWCAD that provides an integrated advanced software defined sensor package used to demonstrate new Naval Warfare capabilities and analyze threat capabilities. This CIP project will procure a Contested Environment Radio Frequency Exploitation Research (CERFER) KeyRadar to support the Ocean Harvest capability and address a warfighting maritime surveillance capability gap. KeyRadar combines multiple bands with sophisticated processing and target detection/recognition to find concealed targets in the most challenging operational environments.

FY 2020

POINT MUGU BACKBONE NORTH

This effort will replace the current core data network that resides at NAWCWD Point Mugu. The current network does not adequately support current demand, technologies, and repairs are difficult due to age. This effort will increase the usable bandwidth and allow for timely repairs as needed. The Point Mugu Cable plant currently supports all NAWCWD RDT&E Labs and Range connectivity on and off station, as well as, data transport for phone, alarm and VTC across the site.

RDT&E HIGH SPEED CORE NETWORK

This project proposal is #3 of 3 separate but synergistic CIP proposals being submitted this year to implement a fundamental Weapons Division (WD) core Research Development Test & Evaluation (RDT&E) communications infrastructure upgrade at primary locations to meet current and future Integrated Warfare Capability /Live Virtual Construct (IWC/LVC) and Speed to Fleet communications requirements.

CHEMICAL PILOT PLANT MODERNIZATION

This project proposal is #2 of 2 separate but synergistic. This effort will modernize the Chemical Pilot Plant at the Energetics Materials Research and Processing Branch, Code 477100D. The purpose is to update our chemical synthesis and scale up capabilities, expanding the types and modalities of chemical processes that can be performed on a pilot scale.

WEBSTER FIELD OUTSIDE FIBER PLANT UPGRADE

The NAWCAD RDT&E Enterprise Network supports all current test programs and laboratories /test facilities, by providing the single, protected data environment for processing and evaluating weapons system test performance on a variety of engineering platforms. The current Webster Field Outside Plant (OSP) distribution system is an aged, damaged, and inadequate direct buried multi-mode fiber system. The cabling was installed over 16 years ago, direct buried with-out tracer cables, thereby exposing the cable to many excavation cuts and requiring splice repairs. The installations also exceeded regulatory distance requirements necessary to support network throughput, seriously crippling mission capabilities. This project will build out network capability at Webster Field by installing new duct-banks, fiber and equipment to existing test site facilities drastically improving mission network capabilities across the base. Alternatives have been considered, however this project is the most cost effective solution for the government.

PAXSIL COMMON ACOUSTIC SIMULATION ENVIRONMENT (CASE)

The NAWCAD PaxSIL is a systems integration and test lab used to mitigate risk and reduce costs including lab evaluation of acoustic system effectiveness in an operationally relevant environment. This project will procure a "deployable" CASE which will provide the capability to stimulate acoustics hardware. Alternatives have been considered, however this project is the most cost effective solution for the government.

LARGE SCALE MILL TURN MACHINE

The NAWCAD Prototype & Manufacturing Division is the sole manufacturer of Cross Deck Pendant (CDP) terminals, a Critical Safety Item (CSI), for the Navy, Air Force, and Marine Corps. Production includes multiple sized terminals (1", 1-1/4", 1-7/16") which are a Navy Core Capability as well as the introduction of larger diameter Compact Swage Machine (CSM) terminals which starting production on in 2018. This project will procure a new Mill Turn machine capable of meeting all of the current CDP terminal quantities and the new CSM requirements. Alternatives have been considered, however this project is the most cost effective solution for the government.

CNC BENDING BRAKE

The NAWCAD Prototype & Manufacturing Division Metal Fabrication Shop currently has only one operational manual bending brake that is 35 years old and a second brake which is inoperable. Both bending brake machines are well beyond their useful life and parts/repairs are no longer supported by original manufacturers. This project will procure a new bending brake capable of meeting mission needs. Alternatives have been considered, however this project is the most cost effective solution for the government.

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Department of the Navy/ Research and Development	#002 - ADPE						Naval Air Warfare Center		
ADP Equipment	FY 2018			FY 2019			FY 2020		
	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Computer Hardware (Production)	3	758	$2,273	2	685	$1,369	1	2,874	$2,874
Computer Software (Operating System)	1	950	$950	1	1,700	$1,700	0	-	$0
Computer Hardware (Network)	3	1,490	$4,471	6	983	$5,900	3	2,047	$6,140
Telecommunications	0	-	$0	0	-	$0	0	-	$0
Other Support Equipment	0	-	$0	0	-	$0	0	-	$0
Total	7	1,099	$7,694	9	997	$8,969	4	2,254	$9,014

Justification:

PROJECTS ABOVE $1M:

FY 2018

UPGRADES TO SCE LAB

The purpose is to create a facility laboratory environment that will have the capability to support Advance, Innovative Technology and research. This will include developing the SCE technology to fill in numerous technology gaps in Electronic Warfare (EW), CYBER, Radar, Communications, and Weapons. This project will afford the ability to obtain the equipment that augment capabilities that exist today in order for Weapons Division (WD) to capitalize on new capabilities and opportunities and to be a recognized leader in SCE technology. This project has the potential to develop customer relationships with OSD efforts, joint advanced technology project with Lawrence Livermore, USMC, and IC organizations.

RDT&E NETWORK DATA ENVIRONMENT

The NAWCAD RDT&E Enterprise Network supports all current test programs and laboratories /test facilities, by providing the single, protected data environment for processing and evaluating weapons system test performance on a variety of engineering platforms. This CIP project will provide a system to securely manage storage assets for maximum capacity utilization across multiple platform collaborative data environments. Alternatives have been considered, however this project is the most cost effective solution for the government.

FY 2019

EW UAV SIMULATION

The rise in Cybersecurity and Electromagnetic Warfare (EMW) requirements for systems used in the Integrated Air Defense System (IADS) spring from the increased demand of EM-spectrum use worldwide. The limited use of unmanned aircraft systems (UAS) to support EW missions, data fusion, resource optimization and personnel training to meet those requirements represent an opportunity for growth in theatre protection and defensive performance that must be evaluated for mission-level impact. The purpose of the EW UAV Simulation is to leverage the existing technologies for digital simulation of jammer resource optimization and allocation solutions as a potential EWO aircrew/analyst training aide, while providing a proof-of–concept for the utility of UASs as a component in the IADS. The EW UAV SIM will leverage existing Government-owned technologies to provide Mission Level Simulation to explore the feasibility of Interoperability and improved Spectral Efficiency in the context of Integrated Air Defense. The EW UAV SIM project is being coordinated with PMA-262 to implement an instantiation that aligns with MQ-4C Triton Integrated Functional Capability (IFC) developments to examine the feasibility of optimal EW sensor integration. Successful proof of concept provided by CIP-funding (labor, hardware, and software investments in EW mission analysis, data fusion, resource optimization, and personnel training) will potentially lead to investment from PMA-262 to develop the defensive performance of UASs in support of EW missions in the IADS.

RDT&E KG INFRASTRUCTURE

This project proposal is #2 of 3 separate but synergistic CIP proposals to implement a fundamental WD core-RDT&E communications infrastructure upgrade. China Lake and Point Mugu will be able to meet current and future Integrated Warfare Center/Live Virtual Construct (IWC/LVC) and Speed to Fleet communications requirements. This second of three proposals is for a key-generating (KG) infrastructure necessary to fundamentally increase the encryption rate and re-configuration capabilities of the RDT&E classified networks.

RDT&E SECURITY INCIDENT EVENT MANAGEMENT (SIEM)

The NAWCAD RDT&E Enterprise Network supports all current test programs and laboratories /test facilities, by providing the single, protected data environment for processing and evaluating weapons system test performance on a variety of engineering platforms. Network infrastructure must meet DoD/DoN mandated logging and continuous monitoring requirements for IA Risk Management Framework (RMF) with a distributed / scalable / cohesive platform to perform continuous monitoring.
Current capabilities operate independently but no centralized reporting/searching capabilities. This CIP project will provide a distributed Security Incident and Event Management (SIEM) tool capable of independent operation, and enterprise searching across all RDT&E devices from an operations center. Alternatives have been considered, however this project is the most cost effective solution for the government.

FY 2020

ASIPT MICHELSON LAB WING 1 FACILITY STANDUP

Advanced Systems Integrated Project Team (ASIPT) is scheduled to move from Bldg. 31598 to Wing 1 of Michelson Lab in 2021 by direction of NAWCWD Leadership. Due to limited workspace designated for team members and the number of required computer networks, the computer systems/networks need to be consolidated (replace stovepipe systems with centralized computing environment [zero/thin client]). Project is the buildup of integrated network and computer system that allows for access to multiple networks at multiple classifications at the user's desk with a minimal of physical footprint and no physical storage or processing of data outside the server room. AISPT also provides analysis and limited test rehearsal using Operator-in-the-Loop (OITL) techniques to assess the mission-level effects of proposed improvements to Navy weapons systems. FY16 & FY17 Capital Investment Program (CIP) projects enabled an OITL expansion that included F-35 simulators and equipment to enable multi-level security for OITL events.

RDT&E NETWORK BACKUP SOLUTION

The NAWCAD RDT&E Enterprise Network supports all current test programs and laboratories /test facilities, by providing the single, protected data environment for processing and evaluating weapons system test performance on a variety of engineering platforms. This CIP project will provide a centralized backup/restore services for lab/customer assets and their stored data. Alternatives have been considered, however this project is the most cost effective solution for the government.

RDT&E CORE NETWORK UPGRADE

The NAWCAD RDT&E Enterprise Network supports all current test programs and laboratories /test facilities, by providing the single, protected data environment for processing and evaluating weapons system test performance on a variety of engineering platforms. This project will procure new equipment to support next-generation network needs, including IA requirements. Alternatives have been considered, however this project is the most cost effective solution for the government.

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Department of the Navy/ Research and Development	#003 - Software Development						Naval Air Warfare Center		
	FY 2018			FY 2019			FY 2020		
Software	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Internally Developed	0	-	$0	0	-	$0	0	-	$0
Externally Developed	4	1,161	$4,645	3	874	$2,623	0	-	$0
Total	4	1,161	$4,645	3	874	$2,623	0	-	$0

Justification:

PROJECTS ABOVE $1M:

FY 2018

ADDITIVE MANUFACTURING DIGITAL ENVIRONMENT

NAWCAD's ability to support Additive Manufacturing and Direct Digital Manufacturing is limited by lack of software tools for 3D CAD and Product Lifecycle Management (PLM). This project will develop software to support the AM Digital Environment Laboratory at NAWCAD. Alternatives have been considered, however this project is the most cost effective solution for the government.

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Department of the Navy/ Research and Development	#004 - Minor Construction						Naval Air Warfare Center		
	FY 2018			FY 2019			FY 2020		
Minor Construction	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Replacement	0	-	$0	0	-	$0	0	-	$0
New Construction	11	884	$9,728	3	2,950	$8,850	6	3,784	$22,702
Environmental Capability	0	-	$0	0	-	$0	0	-	$0
Total	11	884	$9,728	3	2,950	$8,850	6	3,784	$22,702

Justification:

PROJECTS ABOVE $1M:

FY 2018

WSL DROTT ROADWAY EXTENSION MINCON

Construction of split paved roadway for DROTT heavy lift equipment access to P-700 test site.

7.0 LRP

This project will construct a new building to provide office space for Command Corporate Operations personnel. Existing facilities are expensive to maintain and have environmental and safety hazards. Alternatives have been considered, however this project is the most cost effective solution for the government.

MINCON PLANNING AND DESIGN

MINCON Planning and Design will fund the design for NAWCAD construction projects. Alternatives have been considered, however this project is the most cost effective solution for the government.

FY 2019

ENGINEERING SUPPORT LRP

This project will construct a new building to provide office space for engineering personnel. Existing facilities are expensive to maintain and have environmental and safety hazards. Alternatives have been considered, but replacement is the most cost effective for the government. Alternatives have been considered, however this project is the most cost effective solution for the government.

CALIBRATION LAB B410

This project will construct an addition to an existing facility to provide efficient reorganization of existing laboratory operations as well as provide space to execute calibration functions in accordance with DoD environmental standards and industry practice. The addition will incorporate efficient process flows and improve geographically dispersed locations of associated functions; Alternatives have been considered, however this project is the most cost effective solution for the government.

FIBER OPTIC PATHWAY EXPANSION

The NAWCAD RDT&E Infrastructure Division is responsible for operating and maintaining the RDT&E computer networks at NAWC-AD. This project will address the need for increasing the communications pathway infrastructure. Current underground communications pathway backbone is at capacity and cannot support upcoming requirements. Alternatives have been considered, however this project is the most cost effective solution for the government.

FY 2020

WEAPONS & WARFIGHTING CONCEPTS DEVELOPMENT & PROTOTYPONG FACILITY

Construct an approximate 6,000 SF to 7,000 SF laboratory facility that meets the requirements of ICD-705. The facility will increase the availability of secure laboratory space within the perimeter of the Michelson Laboratory compound, address emergent need for multi-level security facility in support of emergent warfighting concepts requiring SCI data in development & prototyping.

TECHNIQUE DEVEILOPMENT & PROTOTYPING CENTER

This proposed Technique Development and Prototyping Center (TDPC) would integrate all existing technique development efforts and prepare NAWCWD for the future of technique development against advanced threats while facilitating collaboration among multiple IPTs, such as JATO (Jamming Techniques Optimization), ASPO (Airborne Self Protect Optimization), IT Blk X, CEA (Collaborative Electronic Attack), F-35, NIFC-EW (Navy Integrated Fire Control - Electronic Warfare), and others. 2,500 sq. ft. brings building total close to 15,000 sq. ft. meeting the required need.

ADVANCED MISSION SYSTEM INTEROPERABILITY (AMSI) LRP

The Integrated Battlespace Simulation and Test Department (IBST) Simulation Division, develops, operates and sustains advanced avionics modeling and simulation labs and facilities supporting RDT&E of aircraft mission systems. This project will construct additional space for advanced mission systems products supporting Special Access Programs. Alternatives have been considered, however this project is the most cost effective solution for the government.

IDENTIFICATION SYSTEM (IDS) LAB CONSOLIDATION LRP

The NAWCAD Combat Integration & Identification Systems (CI&IDS) Division is the Navy's Center of Excellence for shipboard and aircraft Combat Identification (CID) systems and Multi-Mission Data Link Support (MMDLS) systems (e.g., interrogators, transponders, processors, data link systems, antennas, and other Identification Friend or Foe (IFF)-based and data link based hardware solutions). This project will construct a new building that will address limitations in laboratory, production, software, development and test lab spaces. Alternatives have been considered, however this project is the most cost effective solution for the government.

MINCON PLANNING AND DESIGN

MINCON Planning and Design will fund the design for NAWCAD construction projects. Alternatives have been considered, however this project is the most cost effective solution for the government.

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CAPITAL BUDGET EXECUTION
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL AIR WARFARE CENTER
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

FY	Line Item	Category	Capability/Project	Initial Request	Current Proj Cost	Approved Change	Explanation
2018	**1**	**Non ADP**		**$27.811**	**$30.995**	**$3.184**	
			Quality Control/Testing	$14.400	$17.192	$2.792	FY18 Actual and Carryover
			Support Equipment	$13.411	$13.803	$0.392	FY18 Actual and Carryover
	2	**ADP**		**$7.170**	**$7.694**	**$0.524**	
			Computer Hardware (Production)	$1.724	$2.273	$0.549	FY18 Actual and Carryover
			Computer Hardware (Network)	$4.846	$4.471	-$0.375	FY18 Actual and Carryover
			Computer Software (Operating)	$0.600	$0.950	$0.350	FY18 Actual and Carryover
	3	**Software**		**$3.242**	**$4.645**	**$1.403**	
			Externally Developed	$3.242	$4.645	$1.403	FY18 Actual and Carryover
	4	**Minor Construction**		**$9.327**	**$9.728**	**$0.401**	
			New Construction	$9.327	$9.728	$0.401	FY18 Actual and Carryover
TOTAL FY 2018 CIP Program				**$47.550**	**$53.062**	**$5.512**	

FY	Line Item	Category	Capability/Project	Initial Request	Current Proj Cost	Approved Change	Explanation
2019	**1**	**Non ADP**		**$28.517**	**$36.963**	**$8.446**	
			Quality Control/Testing	$16.907	$25.097	$8.190	CIP surcharge added
			Machinery	$1.320	$1.385	$0.065	Budget reclassication
			Support Equipment	$10.290	$10.481	$0.191	Budget reclassication
	2	**ADP**		**$9.432**	**$8.969**	**-$0.463**	
			Computer Hardware (Production)	$1.369	$1.369	$0.000	
			Computer Hardware (Network)	$6.063	$5.900	-$0.163	Budget reclassication
			Computer Software (Operating)	$2.000	$1.700	-$0.300	Budget reclassication
	3	**Software**		**$0.675**	**$2.623**	**$1.948**	
			Externally Developed	$0.675	$2.623	$1.948	Budget reclassication
	4	**Minor Construction**		**$9.726**	**$8.850**	**-$0.876**	
			New Construction	$9.726	$8.850	-$0.876	Budget reclassication
TOTAL FY 2019 CIP Program				**$48.350**	**$57.405**	**$9.055**	

FY	Line Item	Category	Capability/Project	Initial Request	Current Proj Cost	Approved Change	Explanation
2020	**1**	**Non ADP**		**$0.000**	**$16.634**	**$16.634**	
			Quality Control/Testing	$0.000	$8.463	$8.463	New program year added to budget
			Machinery	$0.000	$0.700	$0.700	New program year added to budget
			Support Equipment	$0.000	$7.471	$7.471	New program year added to budget
	2	**ADP**		**$0.000**	**$9.014**	**$9.014**	
			Computer Hardware (Production)	$0.000	$2.874	$2.874	New program year added to budget
			Computer Hardware (Network)	$0.000	$6.140	$6.140	New program year added to budget
	3	**Software**		**$0.000**	**$0.000**	**$0.000**	
			Externally Developed	$0.000	$0.000	$0.000	
	4	**Minor Construction**		**$0.000**	**$22.702**	**$22.702**	
			New Construction	$0.000	$22.702	$22.702	New program year added to budget
TOTAL FY 2020 CIP Program				**$0.000**	**$48.350**	**$48.350**	

CARRYOVER RECONCILIATION
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL AIR WARFARE CENTER
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	FY 2018	FY 2019	FY 2020
Part 1			
1. Net Carry-In	2,458.4	2,656.7	2,691.1
2. Revenue	4,920.1	5,002.4	5,055.3
3. New Orders	5,118.3	5,036.8	5,088.1
4. Exclusions:			
Foreign Military Sales	266.5	297.6	276.8
Base Realignment and Closure	0.0	0.0	0.0
Other Federal Department and Agencies	55.7	57.6	33.5
Non-Federal and Others	22.4	25.1	15.8
Institutional Major Range & Test Facility Base	289.9	355.2	375.4
OUSD(C) Approved Carryover Waiver	0.0	0.0	0.0
5. Orders for Carryover Calculation	4,483.8	4,301.3	4,386.6
6. Weighted Average Outlay Rate	43.8%	42.3%	41.8%
7. Carryover Rate	56.2%	57.7%	58.2%
8. Allowable Carryover	3,268.6	3,240.6	3,361.6
Allowable Carryover(First Year)	2,519.9	2,481.9	2,553.0
Allowable Carryover (Second Year Procurement-funded Orders)	748.7	758.7	808.6
Part II			
9. Balance of Customer Order at Year End	2,656.7	2,691.1	2,723.9
10. Work-in-progress	0.0	0.0	0.0
11. Exclusions:			
Foreign Military Sales	210.2	281.1	346.8
Base Realignment and Closure	0.1	0.1	0.1
Other Federal Department and Agencies	41.0	56.8	53.3
Non-Federal and Others	25.7	39.7	41.5
Institutional Major Range & Test Facility Base	133.3	186.5	256.7
OUSD(C) Approved Carryover Waiver	0.0	0.0	0.0
12. Calculated Actuals Carryover	2,246.4	2,126.9	2,025.5

Some totals may not add due to rounding.

4. Naval Surface Warfare Center

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NARRATIVE
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT – NAVAL SURFACE WARFARE CENTER
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Mission Statement / Overview:
The Naval Surface Warfare Center (NSWC) provides research, development, test and evaluation; in-service engineering; and fleet and integrated logistic support for surface ship combat systems, surface and mine warfare combat systems, ordnance, explosive ordnance disposal technology, mines, amphibious warfare systems, mine countermeasures, special warfare and strategic systems, systems interfaces, weapon systems and subsystems, unique equipment and related expendable ordnance of the Navy surface fleet. In addition, they provide primary technical capability in energetics through engineering, fleet and operational support, manufacturing technology, limited production, industrial base support and research, development, test and evaluation for energetic materials, ordnance devices and components and related ordnance engineering standards. Central to our strategy is the sustainment and development of critical core capabilities that support legacy and emerging systems in the Fleet. Critical to our vision is the need to acquire, train, and retain top quality, diverse, scientists and engineers and to maintain the corresponding infrastructure necessary to support the Navy's future strategic requirements.

Activity Group Composition:
The Center is comprised of eight operating divisions whose operations and locations are described below.

CARDEROCK DIVISION: Provides research, development, test and evaluation, analysis, acquisition support, in-service engineering, logistics and integration of surface and undersea vehicles and associated systems. Also works to develop and apply science and technology associated with naval architecture and marine engineering, and provide support to the maritime industry. The division's primary operating site is located at Bethesda, MD, with supporting operating sites at Ft. Lauderdale, FL, Memphis, TN, Norfolk, VA, Bremerton, WA, and Bayview, ID.

CORONA DIVISION: Serves warfighters and program managers as the Navy's independent performance assessment agent throughout systems' lifecycles by gauging the Navy's warfighting capability of weapons and integrated combat systems, from unit to force level. This is accomplished through assessment of those systems' performance, readiness, quality, supportability, and the adequacy of training. The division has one primary operating site, Corona, CA, with a small engineering sites at Seal Beach, CA and Fallbrook, CA.

CRANE DIVISION: Provides acquisition engineering, in-service engineering and technical support for sensors, electronics, electronic warfare and special warfare weapons. Also works to apply component and system-level product and industrial engineering to

surface sensors, strategic systems, special warfare devices and electronic warfare/information operations systems. The division has one primary operating site, Crane, IN.

DAHLGREN DIVISION: Provides research, development, test and evaluation, analysis, systems engineering, integration and certification of complex naval warfare systems related to surface warfare, strategic systems, combat and weapons systems associated with surface warfare. Also works to provide system integration and certification for weapons, combat systems and warfare systems. The division has two primary operating sites, Dahlgren, VA, and Dam Neck, VA.

INDIAN HEAD EXPLOSIVE ORDNANCE DISPOSAL (EOD) TECHNOLOGY DIVISION: Provides research, development, engineering, manufacturing, test, evaluation and in-service support of energetic systems and energetic materials (chemicals, propellants and explosives) for ordnance, warheads, propulsion systems, pyrotechnic devices, fuzing, electronic devices, Cartridge Actuated Devices and Propellant Actuated Devices (CAD/PADs). Also provides Packaging, Handling, Storage, and Transportation (PHS&T), gun systems and special weapons for Navy, Joint Forces and the Nation. The division develops and delivers Explosive Ordnance Disposal (EOD) technology, knowledge, tools and equipment and their life cycle support through an expeditionary work force which meets the needs of the Department of Defense, combatant commanders and our foreign and interagency partners. It also supports the Executive Manager for EOD Technology and Training. The primary site of operations is Indian Head, MD, with smaller operations at Rison, MD, MacAlester, OK, and Picatinny, NJ.

PANAMA CITY DIVISION: Conducts research, development, test and evaluation, and in-service support of mine warfare systems, mines, naval special warfare systems and other missions that occur primarily in coastal (littoral) regions. The primary operating site is Panama City, FL.

PHILADELPHIA DIVISION: Provides research, development, test and evaluation, acquisition support, engineering, systems integration, in-service engineering and fleet support with cyber-security, comprehensive logistics, and life-cycle savings through commonality. These are provided for surface and undersea vehicle machinery, ship systems, equipment and material. The primary operating site is Philadelphia, PA.

PORT HUENEME DIVISION: Provides test and evaluation, systems engineering, integrated logistic support, in-service engineering and integration of surface ship weapons, combat systems and warfare systems. Also works to provide the leading interface to the surface force for in-service maintenance and engineering support

provided by the Warfare Centers. The primary operating site is Port Hueneme, CA with a detachment in Dam Neck, VA.

Significant Changes Since the FY 2019 President's Budget:
The FY 2020 budget estimate includes increases in the civilian workforce to match projected workload.

Financial Profile:

Orders/Revenue/Expense/Operating Results ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Orders	$4,504.2	$4,640.9	$4,675.1
Revenue	$4,425.2	$4,640.9	$4,675.1
Expense	$4,425.9	$4,669.0	$4,745.9
Operating Results	($0.7)	($28.1)	($70.8)
Capital Surcharge and Other	($2.4)	($14.6)	$0.0
Net Operating Results (NOR)	($3.1)	($42.7)	($70.8)
Prior Year AOR	$116.6	$113.6	$70.8
Other Changes Affecting AOR	$0.0	$0.0	$0.0
Accumulated Operating Results (AOR)	$113.6	$70.8	$0.0

Some totals may not add due to rounding.

Orders, Revenue and Expense: Changes in orders from FY 2018 to FY 2020 are based on updated new orders estimates as coordinated with customers. Increases in expenses are a result of inflation and pricing. Revenue is set to achieve zero AOR in FY 2020.

Collections/Disbursements/Outlays ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Collections	$4,422.5	$4,640.9	$4,675.1
Disbursements	$4,409.6	$4,672.6	$4,742.5
Net Outlays	($13.0)	$31.7	$67.4

Some totals may not add due to rounding.

Budgeted collections and disbursements are based on revenue, expense, Capital Investment Program (CIP) outlay estimates, anticipated changes in accounts payable/accrued labor expenses and accounts receivable.

NARRATIVE
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT – NAVAL SURFACE WARFARE CENTER
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Workload:

Direct Labor Hours (000):	**FY 2018**	**FY 2019**	**FY 2020**
Current Estimate	26,801	26,699	26,669

NSWC workforce remains relatively steady in FY 2020 and continues to size workload to support customer workload.

Performance Indicators: The NSWC outputs are scientific and engineering designs, developments, tests, evaluations, analyses and fleet support in NSWC assigned mission areas. The measure for these outputs is the direct labor hour worked for a customer. Customers are charged a predetermined stabilized billing rate per direct employee hour worked (revenue rate). The rate includes the salary and benefits costs of the performing employee (direct labor costs) and a share of the overhead costs of the NSWC, both general and administrative support and the unique production overhead costs of the performing employee's cost center. Non-labor, non-overhead costs, such as customer required material and equipment purchases, travel expenses, and contractual services, are charged to the customer on an actual cost reimbursable basis, and are excluded from the NSWC stabilized pricing structure. The NSWC uses total stabilized cost per direct labor hour as the performance criterion.

Unit Cost:	**FY 2018**	**FY 2019**	**FY 2020**
Total Stabilized Cost ($Millions)	$2,927.2	$2,937.0	$2,921.4
Workload (DLHs) (000)	26,801	26,699	26,618
Unit cost (per DLH)	$109.22	$110.01	$109.75

Unit Cost is the method established to monitor costs. Unit cost goals allow activities to respond to workload changes by encouraging reduced costs when workload declines and allowing appropriate increases in costs when customers request additional services.

Stabilized / Composite Rates:	**FY 2018**	**FY 2019**	**FY 2020**
Stabilized Rate	$105.74	$105.82	$107.26
Change from Prior Year		0.07%	1.36%
Composite Rate Change		0.82%	1.63%

The Stabilized Rate consists of direct labor and applied overhead. Unique direct non-labor costs are billed on a reimbursable basis to the customer. The composite rate change

incorporates both the stabilized costs and the reimbursable costs. The composite rate change in FY 2020 reflects adjustments in direct workload and pricing changes.

Staffing:

Civilian/Military ES & Workyears:	**FY 2018**	**FY 2019**	**FY 2020**
Civilian End Strength	20,013	19,830	19,830
Civilian Workyears (straight time)	19,076	19,135	19,135
Military End Strength	172	168	171
Military Workyears	176	169	172

Civilian Personnel: The civilian resource estimates are a baseline projection of civilian resources necessary to fulfill programming objectives and coordination with customers. Civilian resource estimates have been adjusted to reflect a balanced program of civilian resources to funded workload.

Military Personnel: The Military resource estimates are a baseline projection of military personnel necessary to fulfill programming objectives and coordination with customers. Military resource estimates have been adjusted to reflect a balanced program of military resources to funded workload.

Capital Investment Program (CIP): The Capital Investment Program allows the NWCF to achieve its mission by reinvesting in plant equipment and facilities. Included in the capital budget are the following types of assets: automated data processing equipment (ADPE); non-ADPE equipment; automated data processing software, internally or externally developed; and minor construction. Minor construction includes projects meeting the criteria of the Defense Laboratory Revitalization Program. The projects will replace aging temporary buildings and upgrade and expand lab capability to accommodate workload growth and increase efficiency.

CIP Authority ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Equipment, Non-ADP / Telecom	$15.4	$22.2	$9.1
Equipment, ADPE / Telecom	$10.3	$3.6	$5.0
Software Development	$0.2	$0.6	$1.2
Minor Construction	$32.5	$31.0	$38.2
Total	$58.3	$57.4	$53.5

Some totals may not add due to rounding.

NARRATIVE
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT – NAVAL SURFACE WARFARE CENTER
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Carryover Compliance ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Net Carry-In	$2,044.4	$2,123.4	$2,123.4
Allowable Carryover	$2,172.6	$2,241.5	$2,263.2
Calculated Actual Carryover	$1,797.3	$1,810.0	$1,826.8
Delta (Actual-Allowable): Above Ceiling (+)/Below Ceiling (-)	($375.3)	($431.5)	($436.4)

Some totals may not add due to rounding.

Carryover for each year is within the allowable carryover limit.

REVENUE AND EXPENSES
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL SURFACE WARFARE
CENTER FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	FY 2018	FY 2019	FY 2020
Revenue:			
Gross Sales			
Operations	4,396.9	4,583.5	4,621.6
Capital Surcharges	0.0	14.6	0.0
Capital Investment Recovery	28.3	42.7	53.5
Other Income			
Total Income	4,425.2	4,640.9	4,675.1
Expenses			
Cost of Materiel Sold from Inventory			
Salaries and Wages:			
Military Personnel Compensation & Benefits	15.1	13.2	13.5
Civilian Personnel Compensation & Benefits	2714.8	2745.2	2758.3
Travel and Transportation of Personnel	133.9	134.4	136.7
Material & Supplies (Internal Operations)	279.5	261.6	266.5
Equipment	53.2	106.6	108.8
Other Purchases from NWCF	217.6	140.2	151.2
Transportation of Things	14.3	5.6	6.0
Capital Investment Recovery	28.3	42.7	53.5
Printing and Reproduction	0.5	2.4	2.4
Advisory and Assistance Services	45.7	0.0	0.0
Rent, Communication, Utilities & Misc Charges	62.7	71.0	75.2
Other Purchased Services	860.6	1146.0	1173.8
Total Expenses	4426.2	4669.0	4745.9
Work in Process Adjustment	0.0	0.0	0.0
Comp Work for Activity Retention Adjustment	-0.3	0.0	0.0
Cost of Goods Sold	4,425.9	4,669.0	4,745.9
Operating Result	-0.7	-28.1	-70.8
Adjustments Affecting NOR	-2.4	-14.6	0.0
Capital Surcharges	0.0	-14.6	0.0
Extraordinary Expenses Unmatched	0.0	0.0	0.0
Other Changes Affecting NOR (All Others)	-2.4	0.0	0.0
Net Operating Result	-0.7	-42.7	-70.8
PY AOR	116.6	113.6	70.8
TOTAL AOR	113.6	70.8	0.0
Non-Recoverable Adjustments impacting AOR	0.0	0.0	0.0
AOR for budget purposes	113.6	70.8	0.0

SOURCES OF NEW ORDERS & REVENUE
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL SURFACE WARFARE CENTER
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	FY 2018	FY 2019	FY 2020
1. New Orders	4,504.2	4,640.9	4,675.1
a. Orders from DoD Components:	3,987.4	4,090.6	4,129.2
Department of the Navy	3,393.8	3,475.2	3,507.5
O & M, Navy	1,151.8	1,186.2	1,176.3
O & M, Marine Corps	78.1	83.7	85.9
O & M, Navy Reserve	2.7	2.3	2.3
O & M, Marine Corp Reserve	0.8	1.2	1.2
Aircraft Procurement, Navy	70.1	69.1	69.6
Weapons Procurement, Navy	93.5	80.8	82.4
Ammunition Procurement, Navy/MC	63.6	60.3	61.8
Shipbuilding & Conversion, Navy	414.4	421	424.5
Other Procurement, Navy	445.6	445.1	463.3
Procurement, Marine Corps	26.8	41	41.2
Family Housing, Navy/MC	0.0	0.0	0.0
Research, Dev., Test, & Eval., Navy	1,045.1	1,083.8	1,098.2
Military Construction, Navy	0.2	0.0	0.0
National Defense Sealift Fund	1.1	0.6	0.7
Other Navy Appropriations	0.0	0.0	0.0
Other Marine Corps Appropriations	0.0	0.0	0.0
Department of the Army	78.3	90.2	91.5
Army Operation & Maintenance	23.9	19.5	19.7
Army Res, Dev, Test, Eval	28.1	33.4	33.7
Army Procurement	25.9	25.4	26.1
Army Other	0.4	11.8	11.9
Department of the Air Force	108.8	123	125
Air Force Operation & Maintenance	43.2	47.7	48.5
Air Force Res, Dev, Test, Eval	25.6	33.2	33.6
Air Force Procurement	40.0	42.1	43.0
Air Force Other	0.0	0.0	0.0
DOD Appropriation Accounts	406.6	402.1	405.2
Base Closure & Realignment	0.0	0.0	0.0
Operation & Maintenance Accounts	82.7	90.5	91.9
Res, Dev, Test & Eval Accounts	262.9	240	241.4
Procurement Accounts	50.8	58.9	59.0
Defense Emergency Relief Fund	0.0	0.0	0.0
DOD Other	10.1	12.8	12.9
b. Orders from other Fund Activity Groups	283.6	325.8	322.9
c. Total DoD	4,271.0	4,416.3	4,452.1
d. Other Orders:	233.2	224.5	223
Other Federal Agencies	57.7	61.4	62.1
Foreign Military Sales	156.8	150.2	147.7
Non Federal Agencies	18.7	12.9	13.1
2. Carry-In Orders	2,044.4	2,123.4	2,123.4
3. Total Gross Orders	6,548.6	6,764.3	6,798.5
a. Funded Carry-Over before Exclusions	2,123.4	2,123.4	2,123.4
4. Revenue(-)	4,425.2	4,640.9	4,675.1
5. End of Year Work-In-Process (-)	0.0	0.0	0.0
6. FMS, BRAC, Other Federal, Non-Federal orders, and Inst. MRTFB (-)	326.1	313.4	296.6
7. Funded Carryover	1,797.3	1,810.0	1,826.8

Note: Line 5 (End of Year Work-In-Process) is adjusted for Non-DOD BRAC, FMS, and Institutional MRTFB

CHANGES IN THE COSTS OF OPERATIONS
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL SURFACE WARFARE CENTER
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	Costs
FY 2018 Estimated Actuals	**4,425.9**
FY 2019 President's Budget:	**4,538.2**
Estimated Impact in FY 2019 of Actual FY 2018 Experience:	**131.2**
Pricing Adjustments:	**3.2**
Civilian Personnel	0.0
General Purchase Inflation	3.0
Fuel Price	0.1
Program Changes:	**-1.8**
Other Changes:	**-1.8**
Capital Investment Recovery	0.0
Facilities Sustainment, Restoration & Modernization	0.0
Realign Naval Innovative Science and Engineering (NISE) to CIP for execution of Lab Revitalization Program Projects	-14.6
Rebaseline NISE Funding to 2% of Orders	12.9
FY 2019 Current Estimate:	**4,669.0**
Pricing Adjustments:	**35.6**
Annualization of Prior Year Pay Raises	**0.1**
Civilian Personnel	0.0
Military Personnel	0.1
FY 2020 Pay Raise	**0.2**
Civilian Personnel	0.0
Military Personnel	0.2
Fuel Price Changes	0.0
General Purchase Inflation	30.8
Other Price Changes (list)	**4.6**
Working Capital Fund Price Changes	4.6
Productivity Initiatives and Other Efficiencies:	**0.0**
Program Changes:	**12.3**
Other Changes:	**29.1**
Capital Investment Recovery	10.8
Facilities Sustainment, Restoration & Modernization	7.9
Change in work days	10.3
Civilian Equivalency Rate Changes	0.0
FY 2020 Estimate:	**4,745.9**

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CAPITAL INVESTMENT SUMMARY
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL SURFACE WARFARE CENTER
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

		FY 2018		FY 2019		FY 2020	
Line #	Description	Quantity	Total Cost	Quantity	Total Cost	Quantity	Total Cost
1	**Non-ADPE and Telecom Equipment >= $.500M**	**38**	**$15.361**	**20**	**$22.223**	**15**	**$9.127**
	- Vehicles	1	$0.800	0	$0.000	0	$0.000
	- Material Handling	0	$0.000	0	$0.000	0	$0.000
	- Installation Security	0	$0.000	0	$0.000	0	$0.000
	- Quality Control/Testing	19	$7.278	14	$7.773	9	$5.820
	- Medical Equipment	0	$0.000	0	$0.000	0	$0.000
	- Machinery	10	$4.424	3	$1.600	3	$1.683
	- Support Equipment	8	$2.859	3	$12.850	3	$1.624
2	**ADPE and Telecom Equipment >= $.500M**	**33**	**$10.301**	**4**	**$3.559**	**4**	**$5.036**
	- Computer Hardware (Production)	14	$2.598	0	$0.000	1	$1.851
	- Computer Hardware (Network)	16	$6.452	2	$1.630	1	$2.000
	- Computer Software (Operating)	0	$0.000	0	$0.000	1	$0.585
	- Telecommunications	3	$1.251	2	$1.929	1	$0.600
	- Other Support Equipment	0	$0.000	0	$0.000	0	$0.000
3	**Software Development >= $.500M**	**2**	**$0.170**	**1**	**$0.600**	**1**	**$1.200**
	- Internally Developed	2	$0.170	1	$0.600	0	$0.000
	- Externally Developed	0	$0.000	0	$0.000	1	$1.200
4	**Minor Construction (>= $.500M and <= $2.000M)**	**44**	**$32.473**	**35**	**$30.968**	**18**	**$38.165**
	- Replacement Capability	19	$11.994	11	$6.189	6	$10.517
	- New Construction	25	$20.479	24	$24.779	12	$27.648
	- Environmental Capability	0	$0.000	0	$0.000	0	$0.000
	Grand Total	**117**	**$58.305**	**60**	**$57.350**	**38**	**$53.528**
	Total Capital Outlays		**$27.496**		**$46.650**		**$53.528**
	Total Capital Investment Recovery		**$28.333**		**$42.716**		**$53.528**

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Department of the Navy/ Research and Development	#001 - Non-ADPE						Naval Surface Warfare Center		
	FY 2018			FY 2019			FY 2020		
Non-ADP Equipment	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Vehicles	1	$ 0.800	$ 0.800	0	-	$0	0	-	$0
Material Handling	0	-	$0	0	-	$0	0	-	$0
Installation Security	0	-	$0	0	-	$0	0	-	$0
Quality Control/ Testing	19	$ 0.383	$7.278	14	$ 0.555	$7.773	9	$0.647	$5.820
Medical Equipment	0	-	$0	0	-	$0	0	-	$0
Machinery	10	$ 0.442	$4.424	3	$ 0.533	$1.600	3	$0.561	$1.683
Support Equipment	8	$ 0.357	$ 2.859	3	$ 4.283	$12.850	3	$0.541	$1.683
Total	38	$ 0.404	$15.361	20	1.111	$22.223	15	0.612	$9.186

Justification:

Machinery These Non-ADPE equipment investments support mission essential research, development, test and evaluation initiatives. Investments include the replacement of equipment that is unsafe, beyond economical repair; technically obsolete; or otherwise unusable, as well as, support equipment for new capabilities. Equipment procurements will support initiatives such as: - Advanced ballistics systems - Next Generation Training & Simulation Systems
- New Shipboard technologies - Hypervelocity penetrating weapons and kinetic energy weapons - High performance tactical computing systems
Benefit: These provide research and development equipment to support new mission areas or new test and evaluation techniques to enhance the overall effectiveness of the warfare center mission. Investments categorized as machinery provide enabling technology insertion, and machinery integration into new acquisition programs and the deployment of machinery initiatives into the fleet. Impact: These investments support the Navy's Maritime strategy for maintaining readiness and building a relevant and future force for surface ships and their systems. Investments provide for new mission research and development equipment essential to the test and evaluation of emerging ship-board technologies. A cost analysis was performed on all investment projects under $1,000,000. An economic analysis was performed on one project exceeding $1,000,000; project selected had highest, net present value compared to alternative investments. Failure to make these investments will limit Warfare Centers' ability to perform critical R&D

and transition technology to the fleet, and the ability to perform tests & evaluations. All non-ADPE Machinery projects have an estimated useful life of 10 years and an average payback period of 2.7 years.

Quality Control/Testing Equipment: These investments provide capital equipment required to ensure that the development and/or maintenance methodology and standards used for quality control/assurance and testing of ship systems are adequate to meet Navy requirements. This is accomplished through diagnostic analysis, fault identification, failure analysis, testing and calibration for ship components. Products typically include electronic modules, circuit cards, power supplies, displays, assemblies and sub-assemblies of shipboard machinery and components. This equipment provides support for the development, production, and servicing of Navy weapon and combat systems. Investments include the replacement of equipment that is unsafe, beyond economical repair; technically obsolete; or otherwise unusable, as well as, support equipment for new capabilities.
Benefit: Quality Control/Assurance and Testing investments provide the Navy reliable processes and procedures to ensure technical specifications and functional requirements meet developed product/service standards. The identification of unit failures and poor service results in corrective action designed to improve the production or service process being measured to achieve the desired mission results. These investments support the Navy's Maritime strategy for surface ships and their systems. Investments provide for quality control/assurance and test results that are accurate and emulate shipboard environments eliminating the need to schedule ship board testing and speeding the retest of ships systems. A cost analysis was performed on all investment projects under $1,000,000. An economic analysis was performed on projects exceeding $1,000,000; projects selected had highest, net present value compared to alternative investments. Failure to make these investments may result in economically inefficient operations, unreliable test results, or human casualties. All non-ADPE Quality Control/Testing projects have an estimated useful life of 10 years and an average payback period of 5.6 years.

Support Equipment: Non-ADPE support equipment investments support mission essential research, development, test and evaluation of equipment that is unsafe, beyond economical repair, technically obsolete, or otherwise unusable. Equipment supports Warfare Center Core Equities including ship/ship systems, ship weapon systems, ship combat systems, ordnance, and littoral combat systems. Equipment supporting this mission includes explosive detection equipment, ship hull test equipment, seafloor/sub-floor sonar imaging equipment, and test and evaluation equipment for various surface ship systems.
Benefit: Mission essential research and development equipment must operate at optimal efficiency to achieve proper test and evaluation results. Equipment is replaced with modern reliable equipment to support the research and development mission of the Naval Warfare Centers.
The Naval Surface Warfare Center activities are responsible for new product testing as well as system In-Service-Engineering. Failure to make these investments may result in work that produces obsolete results to the scientific community, economically

inefficient operations and possible risk to human life. A cost analysis was performed on all investment projects under $1,000,000. An economic analysis was performed on projects exceeding $1,000,000; projects selected had highest, net present value compared to alternative investments. All non-ADPE support equipment projects have an estimated useful life of 10 years and the average payback period is 4 years.

Extrusion Plant Cabinet X-Ray System – FY18 $1,540k – Project will procure a multi-purpose, real time cabinet x-ray system with a grain handling system. The existing cabinet x-ray system has been in service in the Extrusion Plant since 1989. It is the only system on station capable of performing real time radiographic inspection of propellant grains and motors. Program requirements for system qualification require achieving 2-1T sensitivity during continuous 360° rotations. Versatility of the current system is limited. A new system using digital imaging will increase image quality and reduce requalification costs. Digital imaging technology incorporates Automatic Defect Recognition (ADR) in the inspection process, reducing labor costs. The new system will have increased reliability and reduced downtime. The payback period for this investment is 8 years.

Computer X-Ray Tomography System Equipment & Install – FY19 $1,600K – The acquisition of a CT system will support fleet operation readiness and availability and enable expertise in the areas of additive manufacturing (AM); power and energy; materials development for ceramics, polymers, metals, and composites; corrosion and coatings; failure analysis; and reverse engineering for both in-service support and research and development (R&D). The payback period for this investment is 3 years.

Secure Work Center – FY19 $2,150K – Planned Lab Revitalization Project (R&R) – will transfer $2,150k of NISE funds into CIP Program to pay for this project. Project will procure a Secure Space in a Box: A mobile venue to facilitate Secret material data management and facilitation, Secret data storage, as well as laboratory space footprint for system buildup.
Mobile venue is a fully functional collateral Secret workspace used in an open storage capacity available for use as a meeting space, work station or lab station with NIPRnet and SIPRnet connectivity. The space will include air conditioning, as well be enabled with all of the security requirements for collateral secret. The payback period for this investment is 5 years.

Tracking Radar – FY19 $2,050K – Project will procure a Weibel 240 Watt azimuth and elevation monopulse tracking radar. The radar provides three-dimension Time Space Position Information (TSPI) for gun projectiles and other objects in flight on the Potomac River Test Range. Current tracking of 5 inch gun projectiles is possible to 17k yards though track data is poor towards latter end. The payback period for this investment is 5.28 years.

Computed Tomography (CT) X-ray – FY19 $1,000K – Project will procure a CT X-Ray System (Computer Tomography). CT x-ray provides a 3 dimensional view of the item being inspected instead of the limited 2 dimensional profile. The non-destructive nature of 3D CT x-ray allows in-situ quality inspection of hardware (microelectronics, assemblies, projectiles, fuses, rocket motors, mortars, etc.) to reveal cyber threats, identify defects, reduce program risks, increase range safety and increase quality. The payback period for this investment is 4 years.

MVDC Conversion & Distribution System – FY19 $1,403K – This project will procure and install 2.5 MW of 12kVDC modular multilevel converter (MMC) for testing. This system replaces an obsolete, inoperable 2.5MW 700VDC test source. The payback period for this investment is 2 years.

RS-Mobile Ballistic Tracking Radar – FY19 $1,000K – This project will procure an upgraded variant of the current tracking radar systems, capable of tracking stable and unstable projectiles, across the Ground Ammunition portfolio and novel Hyper Velocity Projectiles. The payback period for this investment is 4.5 years.

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Department of the Navy/ Research and Development	#002 - ADPE						Naval Surface Warfare Center		
	FY 2018			FY 2019			FY 2020		
ADP Equipment	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Computer Hardware (Production)	16	$0.403	$6.452	2	$0.815	$1.630	1	$2.000	$2.000
Computer Hardware (Network)	14	$0.186	$2.598	0	-	$0.000	1	$1.851	$1.851
Computer Software (Operating System)	0	-	$0.000	0	-	$0.000	1	$0.585	$0.585
Telecommunications	3	$0.417	$1.251	2	$0.965	$1.929	1	$0.600	$0.600
Other Support Equipment	0	-	$0.000	0	-	$0.000	0	-	$0.000
Total	33	0.312	10.301	4	$0.890	$3.559	4	$1.259	$5.036

Justification:

ADP Equipment Computer Hardware (Production): These investments will support the acquisition of automated data processing and telecommunications equipment for the surface ship research and development community. Funds will provide networks/connectivity to all Naval Warfare Center activities and procurement of hardware for mission essential research and development computing needs and centralized system hosting including: Business System Replacement, technical refresh of classified clusters, intrusion detection control systems, High Speed Computing, and Research & Development. Equipment supports maritime modeling, simulation, and testing. Benefit: The projected benefits include technology tools for the research and development community and continuity of operations for standard business systems throughout the Warfare Center. Impact: ADP Equipment supporting the research and development community must remain on the cutting edge of technology to conduct complex simulations, harness advanced data analytics & machine learning capabilities, perform predictive analysis, and analyze surface ship system performance. The capability to conduct cutting edge scientific computing within the R&D community is in jeopardy if investments are not made. Current equipment supporting mission essential systems will no longer be supported by the manufacturer. To ensure continuity of business operations, new hardware platforms must be operational. Test, and Evaluation Networks. Investments will include routers, servers, firewalls, multiprocessor production nodes, development stations, data archival solutions, etc.

A cost analysis was performed on all investment projects under $1,000,000. ADPE Computer Hardware Production projects have an estimated useful life of 10 years and the average payback period is 2.5 years.

ADP Equipment Computer Hardware (Network): These investments will support the acquisition of automated data processing and telecommunications equipment for the surface ship research and development community. Funds will provide networks/connectivity to all Naval Warfare Center activities and procurement of hardware for mission essential research and development computing needs and centralized system hosting including: RDT&E upgrades, fiber infrastructure, Business System Replacement, High Speed Computing, and Research, Development, Test, and Evaluation Networks. Benefit: The projected benefits include technology tools for the research and development community and continuity of operations for standard business systems throughout the Warfare Center. Impact: ADP Equipment supporting the research and development community must remain on the cutting edge of technology for to conduct complex simulations, harness advanced data analytics & machine learning capabilities, perform predictive analysis, and analyze surface ship system performance. The capability to conduct cutting edge scientific computing within the R&D community is in jeopardy if investments are not made. Current equipment supporting mission essential systems will no longer be supported by the manufacturer. To ensure continuity of business operations, new hardware platforms must be operational. Investments will include virtualized combat systems, advanced networking test beds, and cellular signal repeater systems. A cost analysis was performed on all investment projects under $1,000,000. An economic analysis was performed on projects exceeding $1,000,000; projects selected had highest, net present value compared to alternative investments. ADPE Computer Hardware Network projects have an estimated useful life of 10 years and the average payback period is 5 years.

Telecommunications: These investments support telecommunications equipment for the surface ship research & development community. Funds will assist in providing secure public address systems, and video teleconferencing upgrades that meet operational and cybersecurity requirements. Failure to make these investments subjects communication systems to cyber terrorism, espionage, or other threats; additionally, it will jeopardize the ability to mass communicate in the event of an emergency. A cost analysis was performed on all investment projects under $1,000,000. Telecommunication projects have an estimated useful life of 10 years and the average payback period is 3.8 years.

Research, Development, Test & Evaluation Classified Network Infrastructure Upgrade Phase 2 - TACLane Upgrades – FY18 $2,494K – The RDT&E Network provides advanced support of network hardware (i.e. DREN, SDREN, JMETC, NTN) and central management of IT Systems, enabling communications/collaboration with/by strategic customers and Warfighters. The key to

enabling this capability is the availability of base fiber to connect systems across base. The payback period for this investment is 6 years.

NREN (WC RDT&E Network Consolidation) – FY19 $1,630K; FY20 $2,000K – The NREN network will consolidate RDT&E Network services and bring additional visibility to the WC RDT&E Network. This project will add additional hardware, software, storage and monitoring capabilities required to allow for the further consolidation of the WC RDT&E Network. The payback period for this investment is 5 years.

Innovation Cell Equipment – FY20 $1,851K – This project will procure high-tech equipment to outfit an Innovation Cell Facility to promote creative thinking, collaboration, and high velocity learning (HVL) for the workforce. This equipment package will provide state-of-the-art technology for the facility to enable collaboration internally and across the NR&DE to rapidly develop, visualize, and share solutions to complex Naval problems. The payback period for this investment is 2.4 years.

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Department of the Navy/ Research and Development	#003 - Software Development						Naval Surface Warfare Center		
	FY 2018			FY 2019			FY 2020		
Software	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Internally Developed	2	0.085	0.170	1	0.600	0.600	0	0.000	0.000
Externally Developed	0	0.000	0.000	0	-	0.000	1	1.200	1.200
Total	2	0.085	0.170	1	0.600	0.600	1	1.200	1.200

Justification:

Software Development: These investments will support the acquisition or development of software for the more effective and efficient operation of navy owned facilities/models.
These investments will directly support the transformation of the Warfare Centers to become a more agile support organization. These investments will improve the Navy's modeling and simulation capabilities and test and evaluation capabilities for submarine networks and systems. These modeling and simulation capabilities also enable the Warfare Centers to be more proactive in developing life-cycle solutions by providing the capability to model end-to-end mission/platform level naval engagements. A cost comparison analysis was performed on all individual projects less than $1M. The useful life for these projects is 5 years and a range of payback periods from 1 – 5 years.

RS-Measurement Automation & Integration System – FY20 $1,200K – Multiple COTS procurements and systems integration to develop and field an automated, integrated, and modern test equipment solution. The solution will perform all ordnance test functions: video (static and tracking), radar, firing and targeting position data and be deployable from a Mobile Test Control Center. The solution will provide additional surveillance and situational awareness for the range safety officer. The payback period for this investment is 3.7 years.

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Department of the Navy/ Research and Development	#004 - Minor Construction						Naval Surface Warfare Center		
	FY 2018			FY 2019			FY 2020		
Minor Construction	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Replacement	25	$0.819	$20.479	24	$1.032	$24.779	12	$2.304	$27.648
New Construction	19	$0.631	$11.994	11	$0.563	$6.189	6	$1.753	$10.517
Total	44	$0.738	$32.473	35	$0.885	$30.968	18	$2.120	$38.165

Justification:

New Construction: Investments in Minor Construction enhance the Naval Warfare Center Mission by developing buildings, structures or other real property. Minor Construction projects will replace obsolete facilities, consolidate operations for productivity increases, provide state of the art processing areas for new R&D missions, and correct environmental/safety deficiencies. Minor construction projects include all costs to deliver a complete and usable project. Minor Construction is used at the Naval Warfare Centers to: - modify existing spaces and construct new facilities to provide suitable space to design and test new equipment for the surface warfare community. - improve security measures and provide increase security for new initiatives - reduce operating expenses by building or improving government owned facilities so that leased space, high maintenance space, or portable space may be vacated. - reduce energy consumption by installing energy efficient building systems - modify existing systems to bring facilities up to current building, safety, or environmental codes.

Failure to make these investments may render our infrastructure and facilities unable to support modern technologies and operational capabilities, pose environmental risks, and may result in human casualties in the event of structural collapse or some other unforeseen catastrophe. A cost analysis was performed on all investment projects under $1,000,000. An economic analysis was performed on projects exceeding $1,000,000; projects selected had highest, net present value compared to alternative investments. Minor Construction projects such as buildings and warehouses have an estimated useful life of 40 years; minor construction projects such as towers, wharves, and docks have an estimated useful life of 20 years. The average payback period is ~14 years.

Replacement: Investments in Minor Construction enhance the Naval Warfare Center Mission by developing buildings, structures or other real property. Minor Construction projects will replace obsolete facilities, consolidate operations for productivity increases, provide state of the art processing areas for new R&D missions, and correct environmental and/or safety deficiencies. Minor

construction projects include all costs to deliver a complete and usable project. Minor Construction is used at the Naval Warfare Centers to: - modify existing spaces and construct new facilities to provide suitable space to design and test new equipment for the surface warfare community. - improve security measures and provide increase security for new initiatives - reduce operating expenses by building or improving government owned facilities so that leased space, high maintenance space, or portable space may be vacated. - reduce energy consumption by installing energy efficient building systems - modify existing systems to bring facilities up to current building, safety, or environmental codes.
Failure to make these investments may render our infrastructure and facilities unable to support modern technologies and operational capabilities, pose environmental risks, and may result in human casualties in the event of structural collapse or some other unforeseen catastrophe. A cost analysis was performed on all investment projects under $1,000,000. An economic analysis was performed on projects exceeding $1,000,000; projects selected had highest, net present value compared to alternative investments. Minor Construction projects such as buildings and warehouses have an estimated useful life of 40 years; minor construction projects such as towers, wharves, and docks have an estimated useful life of 20 years. The average payback period is 4 years.

Advanced System Integration Facility Office Space – FY18 $2,232K – Project is a High Bay Renovation is required to address inadequate High Bay space for accomplishing the growing workload in Advanced System Integration. In addition, growing tasking from customers require ECP kits to be installed on approximately 150 Internally Transportable Vehicles (ITV). These projects will have functions in support of the integration work that will be performed in this High Bay space of the building. The payback period for this investment is 10.5 years.

MINCON Construct SEAFAC Fleet Support Expansion – FY19 $1,527K – This project will construct the expansion of the SEAFAC Fleet Support Facility to accommodate the growth and expansion of acoustic trials performed at SEAFAC. The expansion is required for trial safety requirements, acquisition system complexity, mixed gender analysis teams, increased data types being acquired (SLIP/Decomp/etc.), and an increased sponsor participation in acoustic trials. The payback period for this investment is 11 years.

MINCON Design/Build SFOMF Storage Laboratory – FY19 $1,200K – This project designs/constructs a new 4,300 SF low-rise pre-engineered storage laboratory facility. It will be configured with two roll-up doors on the southern end of the building and four rows as standard warehouse racks with 12-foot aisles. This project supports alignment with Surface and Undersea Vehicle Underwater Signatures, Silencing Systems, and Susceptibility, as well as Surface and Undersea Vehicle Non-Acoustic Topside Signatures, Silencing Systems, and Susceptibility. The payback period for this investment is 2 years.

Area Distribution Network Construction – FY19 $4,536K – Planned Lab Revitalization Project (LRP) – $1,784k of NISE funds will be transferred into CIP Program to help pay for this project. This project will consolidate the installations servers, main distribution,

area network switches, UPS backup system, NMCI service delivery point, and area distribution network. This project consolidates RDT&E networks, production networks, and support operations into a consolidated network center by providing a new expansion building to meet the basic facility requirements for ACIO/Information Tech Division, associated supporting office space and special purpose areas that support core RDT&E functions. The payback period for this investment is 40 years.

Laboratory Infrastructure Network Communications System (C-LINCS) Phase 2 – FY19 $2,000K – The RDT&E Network provides advanced support of network hardware (i.e. DREN, SDREN, JMETC, NTN) and central management of IT Systems, enabling communications/collaboration with/by strategic customers and Warfighters. The key to enabling this capability is the availability of base fiber to connect systems across base. This project will construct paths in buried duct banks for thousands of strands of fiber to connect disparate systems. The payback period for this investment is 20 years.

Electronic Attack Test Range – FY19 $1,489K – This project will construct a long range test facility in support of a number of electronic warfare systems. This includes building a raised test platform and ramp and providing power and network drops. This project also includes the clearing of the trees in the immediate area and down range transmit/receive areas. Outdoor testing is the most cost efficient way to accurately emulate RF and EW performance characteristics. This capability is required to test current and future EW systems along with supporting R&D efforts. The test facility will support Maritime EW, Airborne EW, Ground EW, and EO/IR. The payback period for this investment is 4 years.

S&T Innovation & Collaboration Space – FY19 $1,800K – This project will construct a dedicated innovative office space for Science & Technology professionals chartered with leading the roll-out of an innovation program. The payback period for this investment is 3.8 years.

E3 Assessment and Support Facility – FY19 $5,000K – This project will construct a controlled access facility (~10,000 sq. ft.) to accommodate approximately 50 personnel. This is required to support Integrated Topside Design (ITD) efforts for US Navy ships. Recent growth in the number and complexity of topside systems, including directed energy and unmanned systems, is resulting in increased tasking for the Topside Requirements, Analysis, and Design personnel. As the Engineering Agent for ITD, these personnel have the unique role of integrating electromagnetic and optical systems, sensors, and hard-kill and soft-kill effectors into an optimized total ship system. The payback period for this investment is 14 years.

Motor Dissection – FY19 $1,693K – This project will build hardened bays onto a dissection facility in order to limit any damage caused by inadvertent motor ignitions during cutting. Dissection capability is required to support all Ordnance Assessment (OA)

programs for Navy motors and also for Engineering Investigations (EI's). Extending the end of life of motors saves significant costs for the Navy. All known dissection methods have had incidents, so it is an expected outcome that needs to be mitigated. The payback period for this investment is 10 years.

Test Range Support Facility – FY19 $2,300K – This project will design a Test Range Support Facility. The facility will incorporate 3 high bay mission areas for Test Range Operations. The payback period for this investment is 6 years.

Advanced Program Integration Lab – FY19 $2,499K – This project will construct a facility to accommodate development, systems engineering, testing and life cycle support of state of the art concepts, equipment and computer software for Littoral and Strike Warfare Systems. The payback period for this investment is 2.5 years.

Earth Covered Magazine – FY19 $1,000K – This project involves the replacement of 1 Earth Covered Magazines with a new 25'x 80' earth covered ordnance magazine. The magazines shall have entrance doors that support vehicle access for offload and on load operations. The payback period for this investment is 3.3 years.

Warfare Center Collaboration Facility – FY19 $1,000K – This project is for the design of the conversion of a vacant warehouse facility into a waterfront operations support facility housing personnel from multiple Warfare Center Divisions, supporting multiple ship classes (DDG, LCS, Zumwalt) and combat system programs with pier-side engineering expertise for Aegis Modernization, Littoral Combat Ship T&E, Mission Package Support and Gun systems support. The payback period for this investment is 2.6 years.

MINCON Construct Ship Design and Fleet Support Center – FY20 $4,528K – This project will construct a new Ship Design & Fleet Support Center building to meet the rapidly growing fleet of ships and submarines that employ innovative designs and systems to meet the future objectives of the Navy and Marine Corps. The Center will require a state-of-the-art design space that fosters integrated and collaborative concept development, virtual prototyping, and immersive decision making technologies. The Center will bring together government, commercial and academic collaborators to ensure the US Navy maintains technological advantage and maritime superiority in an ever increasing dynamic environment. The payback period for this investment is 17 years.

Bldg 38 Advanced System Integration Facility – FY20 $3,572K & FY20 $3,742K – This is a two-phase project which provides for a High Bay Renovation required to address inadequate High Bay space for accomplishing the growing workload in Advanced System Integration for Expeditionary Command and Control, sensor fusion, and mobility integration programs. These projects will have

functions in support of the integration work that will be performed in this High Bay space of the building. The payback period for this investment is 6 years.

E3 Systems Integration Facility – FY20 $5,956K – This project will construct a controlled access facility (~10,000 sq. ft.) to accommodate approximately 60 personnel. This is required to support E3 Systems Interoperability efforts for US Navy ships. Recent growth in the number and complexity of topside systems (including directed energy and unmanned systems), presents new operational scenarios with ever challenging saturated electromagnetic environments (EMEs). The payback period for this investment is 3.5 years.

Advanced Concepts Vault Expansion – FY20 $2,150K – This project involves construction of approximately 76' x 55' second floor facility with 14 labs that would be utilized for above-SECRET level work. This facility would expand the advanced concepts vault complex. Expansion of existing facility would take advantage of the existing security and IT teams and procedures that have already been established. The payback period for this investment is 1.9 years.

Warfare Center Collaboration Facility – FY20 $6,140K – This project converts a vacant warehouse facility into a waterfront operations support facility housing personnel from multiple Warfare Center Divisions, supporting multiple ship classes (DDG, LCS, Zumwalt) and combat system programs with pier-side engineering expertise for Aegis Modernization, Littoral Combat Ship T&E, Mission Package Support and Gun systems support. The payback period for this project is 2.6 years.

Advanced Energetics Complex – FY20 $3,860K – This project will construct a one story ground level addition and renovation to a large RDT&E facility. The addition will be approximately 3000 SF and meet current OP5 requirements for handling large quantities of C/D 1.1 material for blast protection, detonation chambers and hydraulic presses. Facility may require upgraded fire protection, lightning protection and utilities. The construction contract will require explosive site approval. The payback period for this project is 8 years.

Earth Covered Magazine – FY20 $1,047K – This project involves the replacement of 1 Earth Covered Magazines with a new 25'x 80' earth covered ordnance magazine. The magazines shall have entrance doors that support vehicle access for offload and on load operations. The payback period for this investment is 3.3 years.

CAPITAL BUDGET EXECUTION
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL SURFACE WARFARE CENTER
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

FY	Line Item	Category	Capability/Project	Initial Request	Current Proj Cost	Approved Change	Explanation
2018	**1**	**Non ADP**		**$9.705**	**$15.361**	**$5.656**	
			Vehicles	$0.000	$0.800	$0.800	Funding adjusted as projects were reprioritized.
			Material Handling	$0.600	$0.000	($0.600)	Funding adjusted as projects were reprioritized.
			Quality Control/Testing	$4.445	$7.278	$2.833	Funding adjusted as projects were reprioritized.
			Machinery	$2.219	$4.424	$2.205	Funding adjusted as projects were reprioritized.
			Support Equipment	$2.441	$2.859	$0.418	Funding adjusted as projects were reprioritized.
	2	**ADP**		**$11.339**	**$10.301**	**($1.038)**	
			Computer Hardware (Production)	$3.453	$2.598	($0.855)	Funding adjusted as projects were reprioritized.
			Computer Hardware (Network)	$6.636	$6.452	($0.184)	Funding adjusted as projects were reprioritized.
			Computer Software (Operating)	$0.000	$0.000	$0.000	
			Telecommunications	$1.250	$1.251	$0.001	Funding adjusted as projects were reprioritized.
			Other Support Equipment	$0.000	$0.000	$0.000	Funding adjusted as projects were reprioritized.
	3	**Software**		**$0.600**	**$0.170**	**($0.430)**	
			Internally Developed	$0.600	$0.170	($0.430)	Funding adjusted as projects were reprioritized.
			Externally Developed	$0.000	$0.000	$0.000	
	4	**Minor Construction**		**$40.136**	**$32.473**	**($7.663)**	
			Replacement	$18.551	$11.994	($6.557)	Funding adjusted as projects were reprioritized.
			New Construction	$21.585	$20.479	($1.106)	Funding adjusted as projects were reprioritized.
			Environmental Capability	$0.000	$0.000	$0.000	
TOTAL FY 2018 CIP Program				**$61.780**	**$58.305**	**($3.475)**	

FY	Line Item	Category	Capability/Project	Initial Request	Current Project Cost	Approved Change	Explanation
2019	**1**	**Non ADP**		**$15.013**	**$22.223**	**$7.210**	
			Vehicles	$0.250	$0.000	($0.250)	Program restructure
			Material Handling	$0.000	$0.000	$0.000	
			Quality Control/Testing	$8.693	$7.773	($0.920)	Program restructure
			Machinery	$3.118	$1.600	($1.518)	Program restructure
			Support Equipment	$2.952	$12.850	$9.898	Program restructure
	2	**ADP**		**$3.353**	**$3.559**	**$0.206**	
			Computer Hardware (Production)	$0.000	$0.000	$0.000	
			Computer Hardware (Network)	$3.353	$1.630	($1.723)	Program restructure
			Computer Software (Operating)	$0.000	$0.000	$0.000	
			Telecommunications	$0.000	$1.929	$1.929	Program restructure
			Other Support Equipment	$0.000	$0.000	$0.000	
	3	**Software**		**$0.000**	**$0.600**	**$0.600**	
			Internally Developed	$0.000	$0.600	$0.600	Program restructure
			Externally Developed	$0.000	$0.000	$0.000	
	4	**Minor Construction**		**$24.342**	**$30.968**	**$6.626**	
			Replacement	$2.580	$6.189	$3.609	Program restructure
			New Construction	$21.762	$24.779	$3.017	Program restructure
			Environmental Capability	$0.000	$0.000	$0.000	
TOTAL FY 2019 CIP Program				**$42.708**	**$57.350**	**$14.642**	

FY	Line Item	Category	Capability/Project	Initial Request	Current Project Cost	Approved Change	Explanation
2020	**1**	**Non ADP**		**$9.127**	**$9.127**	**$0.000**	
			Vehicles	$0.000	$0.000	$0.000	
			Material Handling	$0.000	$0.000	$0.000	
			Quality Control/Testing	$5.820	$5.820	$0.000	
			Machinery	$1.683	$1.683	$0.000	
			Support Equipment	$1.624	$1.624	$0.000	
	2	**ADP**		**$5.036**	**$5.036**	**$0.000**	
			Computer Hardware (Production)	$1.851	$1.851	$0.000	
			Computer Hardware (Network)	$2.000	$2.000	$0.000	
			Computer Software (Operating)	$0.585	$0.585	$0.000	
			Telecommunications	$0.600	$0.600	$0.000	
			Other Support Equipment	$0.000	$0.000	$0.000	
	3	**Software**		**$1.200**	**$1.200**	**$0.000**	
			Internally Developed	$0.000	$0.000	$0.000	
			Externally Developed	$1.200	$1.200	$0.000	
	4	**Minor Construction**		**$38.165**	**$38.165**	**$0.000**	
			Replacement	$10.517	$10.517	$0.000	
			New Construction	$27.648	$27.648	$0.000	
			Environmental Capability	$0.000	$0.000	$0.000	
TOTAL FY 2020 CIP Program				**$53.528**	**$53.528**	**$0.000**	

CARRYOVER RECONCILIATION
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL SURFACE WARFARE CENTER
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	FY 2018	FY 2019	FY 2020
Part 1			
1. Net Carry-In	2,044.4	2,123.4	2,123.4
2. Revenue	4,425.2	4,640.9	4,675.1
3. New Orders	4,504.2	4,640.9	4,675.1
4. Exclusions:			
Foreign Military Sales	156.8	150.2	147.7
Base Realignment and Closure	0.0	0.0	0.0
Other Federal Department and Agencies	57.7	61.4	62.1
Non-Federal and Others	18.7	12.9	13.1
Institutional Major Range & Test Facility Base	0.0	0.0	0.0
OUSD(C) Approved Carryover Waiver	0.0	0.0	0.0
5. Orders for Carryover Calculation	4,271.0	4,416.4	4,452.2
6. Weighted Average Outlay Rate	54.8%	55.0%	54.9%
7. Carryover Rate	45.2%	45.0%	45.1%
8. Allowable Carryover	2172.7	2241.5	2263.3
Allowable Carryover(First Year)	1930.5	1987.4	2007.9
Allowable Carryover (Second Year Procurement-funded Orders)	242.2	254.1	255.4
Part II			
9. Balance of Customer Order at Year End	2,123.4	2,123.4	2,123.4
10. Work-in-progress	0.0	0.0	0.0
11. Exclusions:			
Foreign Military Sales	226.8	213.7	194.5
Base Realignment and Closure	0.1	0.1	0.1
Other Federal Department and Agencies	69.5	71.2	74
Non-Federal and Others	29.6	28.4	27.9
Institutional Major Range & Test Facility Base	0.0	0.0	0.0
OUSD(C) Approved Carryover Waiver	0.0	0.0	0.0
12. Calculated Actuals Carryover	1,797.4	1,810.0	1,826.9

Some totals may not add due to rounding.

5. Naval Undersea Warfare Center

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NARRATIVE
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT – NAVAL UNDERSEA WARFARE CENTER
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Mission Statement / Overview:
The mission of the Naval Undersea Warfare Center (NUWC) is to operate the Navy's full spectrum research, development, test and evaluation, engineering and fleet support center for submarines, autonomous underwater systems and offensive and defensive weapon systems associated with Undersea Warfare.

Activity Group Composition:
NUWC was established in January 1992, and is headquartered in Newport, RI. It is composed of two divisions, located in Newport, RI and Keyport, WA, and each possessing several detachments.

NEWPORT DIVISION: Provides research, development, test and evaluation, engineering, analysis and assessment, and fleet support capabilities for submarines, autonomous underwater systems, and offensive and defensive undersea weapon systems, and stewards existing and emerging technologies in support of undersea warfare. The primary operating site is in Newport, RI with supporting operations at West Palm Beach, FL, Andros Island Bahamas and Norfolk, VA.

KEYPORT DIVISION: Provides test and evaluation; in-service engineering, maintenance, and repair; Fleet readiness, and industrial-base support for undersea warfare systems, countermeasures, and sonar systems. The primary operating site is in Keyport WA, with detachments in Hawthorne, NV, San Diego, CA, Pearl Harbor/Ford Island, HI, Nanoose, British Columbia, and Mechanicsburg, PA.

Significant Changes Since the FY 2019 President's Budget:
FY 2018 has been adjusted to reflect actual execution data including the impact of actual Civilian Personnel costs. The FY 2020 budget estimate includes increases to align resources to projected workload.

NARRATIVE
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT – NAVAL UNDERSEA WARFARE CENTER
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
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Financial Profile:

Orders/Revenue/Expense/Operating Results ($Millions):	FY 2018	FY 2019	FY 2020
Orders	$1,206.6	$1,273.7	$1,242.7
Revenue	$1,191.2	$1,267.2	$1,248.4
Expense	$1,174.7	$1,263.9	$1,272.5
Operating Results	$16.6	$3.2	($24.1)
Capital Surcharge and Other	($1.0)	($5.0)	($5.0)
Net Operating Results (NOR)	$15.6	($1.8)	($29.1)
Prior Year AOR	$15.3	$30.9	$29.1
Other Changes Affecting AOR	$0.0	$0.0	$0.0
Accumulated Operating Results (AOR)	$30.9	$29.1	$0.0

Some totals may not add due to rounding.

Orders, Revenue and Expenses: Changes in orders from FY 2018 to FY 2020 are based on updated new orders estimates as coordinated with customers. Contributing to the change in revenue and expense from FY 2018 to FY 2020 are changes in civilian labor estimates required to support anticipated customer workload. Other changes to revenue and expense are a result of inflation and pricing.

Collections/Disbursements/Outlays ($Millions):	FY 2018	FY 2019	FY 2020
Collections	$1,195.8	$1,266.9	$1,248.2
Disbursements	$1,166.5	$1,261.3	$1,266.3
Outlays	($29.3)	($5.6)	$18.1

Some totals may not add due to rounding.

Budgeted collections and disbursements are based on revenue, cost, Capital Investment Program (CIP) outlay estimates, anticipated changes in accounts payable/accrued labor expenses and accounts receivable.

Workload:

Direct Labor Hours (000):	FY 2018	FY 2019	FY 2020
Current Estimate	7,157	7,258	7,272

The workforce continues to be sized in accordance with funded workload.

NARRATIVE
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT – NAVAL UNDERSEA WARFARE CENTER
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Performance Indicators: The NUWCs output are scientific and engineering designs, developments, test, evaluations, analyses and fleets support in NUWC's assigned mission areas. The measure for these outputs is the direct labor hour worked for a customer. Customers are charged a predetermined stabilized billing rate per direct employee hour worked (revenue rate). The rate includes the salary and benefits costs of the performing employee (direct labor costs) and a share of the overhead costs of the NUWC, both general and administrative support and the unique production overhead costs of the employee's cost center. Non-labor, non-overhead costs, such as customer required material and equipment purchases, travel expenses, and contractual services, are charged to the customer on an actual cost reimbursable basis, and are excluded from NUWC's stabilized pricing structure. The NUWC use total stabilized cost per direct labor hour as their performance criterion.

Unit Cost:	**FY 2018**	**FY 2019**	**FY 2020**
Total Stabilized Cost ($Millions)	$759.5	$791.0	$747.0
Workload (DLHs) (000)	7,174	7,258	6,919
Unit cost (per DLH)	$105.87	$108.99	$107.95

Unit Cost is the method established to monitor costs. Unit cost goals allow activities to respond to workload changes by encouraging reduced costs when workload declines and allowing appropriate increases in costs when customers request additional services

Stabilized / Composite Rates:	**FY 2018**	**FY 2019**	**FY 2020**
Stabilized Rate	$105.02	$106.27	$104.31
Change from Prior Year		1.19%	-1.85%
Composite Rate Change		1.48%	-0.14%

The Stabilized Rate consists of direct labor and applied overhead. Unique direct non-labor costs are billed on a reimbursable basis to the customer. The composite rate change incorporates both the stabilized costs and the reimbursable costs. The composite rate change in FY 2020 reflects adjustments to direct workload, pricing changes, and increases in Naval Innovative Science and Engineering (NISE) funding to comply with 10 USC 2363.

Staffing:

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MARCH 2019

Civilian/Military ES & Workyears:	**FY 2018**	**FY 2019**	**FY 2020**
Civilian End Strength	5,590	5,593	5,593
Civilian Workyears (straight time)	5,397	5,480	5,480
Military End Strength	35	44	44
Military Workyears	18	32	32

Civilian Personnel: The civilian resource estimates are a baseline projection of civilian resources necessary to fulfill programming objectives coordination with customers. Civilian resource estimates have been adjusted to reflect a balanced program of civilian resources to funded workload.

Military Personnel: The Military resource estimates are a baseline projection of military personnel necessary to fulfill programming objectives and coordination with customers. Military resource estimates have been adjusted to reflect a balanced program of military resources to funded workload.

Capital Investment Program (CIP): The Capital Investment Program allows the NWCF to achieve its mission by reinvesting in plant equipment and facilities. Included in the capital budget are the following types of assets: automated data processing equipment (ADPE); non-ADPE equipment; automated data processing software, internally or externally developed; and minor construction. Minor construction includes projects meeting the criteria of the Defense Laboratory Revitalization Program. The projects will replace aging temporary buildings and upgrade and expand lab capability to accommodate workload growth and increase efficiency.

CIP Authority ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Equipment, Non-ADP / Telecom	$4.5	$5.9	$9.0
Equipment, ADPE / Telecom	$6.3	$5.1	$5.1
Software Development	$1.2	$1.8	$1.1
Minor Construction	$8.3	$13.8	$11.2
Total	$20.3	$26.7	$26.4

Some totals may not add due to rounding.

NARRATIVE
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT – NAVAL UNDERSEA WARFARE CENTER
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Carryover Compliance:	**FY 2018**	**FY 2019**	**FY 2020**
Net Carry-In	$661.6	$677.0	$683.6
Allowable Carryover	$541.4	$560.2	$549.3
Calculated Actual Carryover	$413.0	$425.7	$429.4
Delta (Actual-Allowable): Above Ceiling (+)/Below Ceiling (-)	($128.4)	($134.5)	($119.9)

Some totals may not add due to rounding.

Carryover for each budgeted year is within the allowable carryover limit.

REVENUE AND EXPENSES
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL UNDERSEA WARFARE CENTER
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	FY 2018	FY 2019	FY 2020
Revenue:			
Gross Sales			
Operations	1,178.6	1,240.4	1,221.9
Capital Surcharges	0.0	5.0	5.0
Capital Investment Recovery	12.6	21.8	21.5
Other Income			
Total Income	1,191.2	1,267.2	1,248.4
Expenses			
Cost of Materiel Sold from Inventory			
Salaries and Wages:			
Military Personnel Compensation & Benefits	2.9	3.0	3.0
Civilian Personnel Compensation & Benefits	736.5	759.6	763.2
Travel and Transportation of Personnel	39.7	31.3	31.7
Material & Supplies (Internal Operations)	58.4	79.8	81.0
Equipment	3.8	4.0	4.0
Other Purchases from NWCF	79.9	80.6	82.2
Transportation of Things	3.6	2.1	2.1
Capital Investment Recovery	12.6	21.8	21.5
Printing and Reproduction	1.1	1.1	1.1
Advisory and Assistance Services	0.0	0.0	0.0
Rent, Communication, Utilities & Misc Charges	22.4	22.2	23.5
Other Purchased Services	213.9	258.6	259.1
Total Expenses	1,174.9	1,263.9	1,272.5
Work in Process Adjustment	0.0	0.0	0.0
Comp Work for Activity Retention Adjustment	-0.2	0.0	0.0
Cost of Goods Sold	1,174.7	1,263.9	1,272.5
Operating Result	16.6	3.2	-24.1
Adjustments Affecting NOR	-1.0	-5.0	-5.0
Capital Surcharges	0.0	-5.0	-5.0
Extraordinary Expenses Unmatched	0.0	0.0	0.0
Other Changes Affecting NOR (All Others)	-1.0	0.0	0.0
Net Operating Result	16.6	-1.8	-29.1
PY AOR	15.3	30.9	29.1
TOTAL AOR	30.9	29.1	0.0
Non-Recoverable Adjustments impacting AOR	0.0	0.0	0.0
AOR for budget purposes	30.9	29.1	0.0

SOURCES OF NEW ORDERS & REVENUE
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL UNDERSEA WARFARE CENTER
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	FY 2018	FY 2019	FY 2020
1. New Orders	1,206.6	1,273.7	1,242.7
a. Orders from DoD Components:	1,025.3	1,051.0	1,022.6
Department of the Navy	972.7	1,008.9	981.9
O & M, Navy	286.4	294.8	290.9
O & M, Marine Corps	1.3	1.5	1.5
O & M, Navy Reserve	0.4	0.3	0.4
O & M, Marine Corp Reserve	0.0	0.0	0.0
Aircraft Procurement, Navy	6.2	12.2	12.4
Weapons Procurement, Navy	69.5	81.2	79.1
Ammunition Procurement, Navy/MC	0.0	0.0	0.0
Shipbuilding & Conversion, Navy	100.6	109.4	111.9
Other Procurement, Navy	167.1	161.8	161
Procurement, Marine Corps	0.4	1.4	1.5
Family Housing, Navy/MC	0.0	0.0	0.0
Research, Dev., Test, & Eval., Navy	341	345.7	322.6
Military Construction, Navy	0.2	0.0	0.0
National Defense Sealift Fund	0.0	0.5	0.5
Other Navy Appropriations	0.0	0.0	0.0
Other Marine Corps Appropriations	0.0	0.0	0.0
Department of the Army	5.3	3.0	3.4
Army Operation & Maintenance	0.0	0.9	0.9
Army Res, Dev, Test, Eval	1.5	0.2	0.2
Army Procurement	3.8	1.9	2.2
Army Other	0.0	0.0	0.0
Department of the Air Force	3.0	3.4	3.4
Air Force Operation & Maintenance	0.0	1.4	1.4
Air Force Res, Dev, Test, Eval	3.3	2.1	2.1
Air Force Procurement	0.0	0.0	0.0
Air Force Other	0.3	0.0	0.0
DOD Appropriation Accounts	44.3	35.6	33.9
Base Closure & Realignment	0.0	0.0	0.0
Operation & Maintenance Accounts	3.7	3.7	3.7
Res, Dev, Test & Eval Accounts	34.7	29.2	27.4
Procurement Accounts	5.4	2.5	2.5
Defense Emergency Relief Fund	0.0	0.0	0.0
DOD Other	0.6	0.3	0.3
b. Orders from other Fund Activity Groups	84.2	94.8	91.7
c. Total DoD	1,109.5	1,145.8	1,114.3
d. Other Orders:	97.1	127.9	128.4
Other Federal Agencies	4.4	5.9	6.0
Foreign Military Sales	53.7	90.8	91.8
Non Federal Agencies	39.1	31.2	30.7
2. Carry-In Orders	661.6	677.0	683.6
3. Total Gross Orders	1,868.3	1,950.7	1,926.3
a. Funded Carry-Over before Exclusions	677.0	683.6	677.9
4. Revenue(-)	1,191.2	1,267.2	1,248.4
5. End of Year Work-In-Process (-)	0.0	0.0	0.0
6. FMS, BRAC, Other Federal, Non-Federal orders, and Inst. MRTFB (-)	264.1	257.9	248.4
7. Funded Carryover	413.0	425.7	429.4

Note: Line 5 (End of Year Work-In-Process) is adjusted for Non-DOD BRAC, FMS, and Institutional MRTFB

CHANGES IN THE COSTS OF OPERATIONS
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL UNDERSEA WARFARE CENTER
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	Costs
FY 2018 Estimated Actuals	**1,174.7**
FY 2019 President's Budget:	**1,259.8**
Estimated Impact in FY 2019 of Actual FY 2018 Experience:	**3.9**
Pricing Adjustments:	**1.5**
Civilian Personnel	0.0
General Purchase Inflation	0.7
Fuel Price	0.8
Program Changes:	**-2.0**
Other Changes:	**0.8**
Capital Investment Recovery	2.4
Facilities Sustainment, Restoration & Modernization	1.8
Realign NISE to CIP for execution of Lab Revitalization Program Projects	-5.0
Rebaseline NISE Funding to 2% of Reimbursable Orders	1.6
FY 2019 Current Estimate:	**1,264.0**
Pricing Adjustments:	**10.4**
Annualization of Prior Year Pay Raises	**0.0**
Civilian Personnel	0.0
Military Personnel	0.0
FY 2020 Pay Raise	**0.0**
Civilian Personnel	0.0
Military Personnel	0.0
Fuel Price Changes	0.0
General Purchase Inflation	8.2
Other Price Changes (list)	**2.2**
Working Capital Fund Price Changes	2.2
Productivity Initiatives and Other Efficiencies:	**0.0**
Program Changes:	**6.7**
Other Changes:	**-8.6**
Capital Investment Recovery	-0.3
Facilities Sustainment, Restoration & Modernization	0.0
Change in work days	-2.9
Civilian Equivalency Rate Changes	0.0
Realign NISE to CIP for execution of Lab Revitalization Program Projects	-5.0
Rebaseline NISE Funding to 2% of Reimbursable Orders	-0.4
FY 2020 Estimate:	**1,272.5**

CAPITAL INVESTMENT SUMMARY
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL UNDERSEA WARFARE CENTER
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

		FY 2018		FY 2019		FY 2020	
Line #	Description	Quantity	Total Cost	Quantity	Total Cost	Quantity	Total Cost
1	**Non-ADPE and Telecom Equipment >= $.500M**	**9**	**$4.491**	**4**	**$5.936**	**8**	**$8.991**
	- Vehicles	0	$0.000	0	$0.000	1	$0.650
	- Material Handling	3	$0.599	0	$0.000	0	$0.000
	- Installation Security	0	$0.000	0	$0.000	0	$0.000
	- Quality Control/Testing	2	$0.486	1	$0.795	0	$0.000
	- Medical Equipment	0	$0.000	0	$0.000	0	$0.000
	- Machinery	1	$0.274	0	$0.000	1	$0.525
	- Support Equipment	3	$3.132	3	$5.141	6	$7.816
2	**ADPE and Telecom Equipment >= $.500M**	**11**	**$6.319**	**8**	**$5.128**	**9**	**$5.149**
	- Computer Hardware (Production)	4	$1.317	4	$2.705	6	$3.289
	- Computer Hardware (Network)	6	$4.973	2	$1.301	2	$1.260
	- Computer Software (Operating)	0	$0.000	1	$0.591	0	$0.000
	- Telecommunications	0	$0.000	0	$0.000	0	$0.000
	- Other Support Equipment	1	$0.029	1	$0.531	1	$0.600
3	**Software Development >= $.500M**	**4**	**$1.179**	**3**	**$1.848**	**2**	**$1.110**
	- Internally Developed	4	$1.179	2	$1.060	2	$1.110
	- Externally Developed	0	$0.000	1	$0.788	0	$0.000
4	**Minor Construction (>= $.500M and <= $2.000M)**	**15**	**$8.345**	**9**	**$13.798**	**8**	**$11.165**
	- Replacement Capability	1	$0.605	1	$4.348	1	$1.600
	- New Construction	14	$7.740	8	$9.450	6	$8.820
	- Environmental Capability	0	$0.000	0	$0.000	1	$0.745
	Grand Total	**39**	**$20.334**	**24**	**$26.710**	**27**	**$26.415**
	Total Capital Outlays		**$13.248**		**$18.488**		**$17.877**
	Total Capital Investment Recovery		**$12.642**		**$21.752**		**$21.501**

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Department of the Navy/ Research and Development	#001 - Non-ADPE						Naval Undersea Warfare Center		
	FY 2018			FY 2019			FY 2020		
Non-ADP Equipment	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Vehicles	0	-	$0.000	0	-	$0.000	1	$0.650	$0.650
Material Handling	3	$0.200	$0.599	0	-	$0.000	0	-	$0.000
Installation Security	0	-	$0.000	0	-	$0.000	0	-	$0.000
Quality Control/ Testing	2	$0.243	$0.486	1	$0.795	$0.795	0	-	$0.000
Medical Equipment	0	-	$0.000	0	-	$0.000	0	-	$0.000
Machinery	1	$0.274	$0.274	0	-	$0.000	1	$0.525	$0.525
Support Equipment	3	$1.044	$3.132	3	$1.714	$5.141	6	$1.303	$7.816
Total	9	$0.499	$4.491	4	$1.484	$5.936	8	$1.124	$8.991

Justification:

These Non-ADP investments fund the acquisition of mission essential equipment that support research and development, test and evaluation of current and newly developed submarine and undersea systems. Investments include the replacement of equipment that is unsafe, beyond economical repair; technically obsolete; or otherwise unusable, as well as, support equipment for new capabilities. These investments support submarine and undersea warfare systems including advanced sonar and combat systems, autonomous vehicles, weapons system, sensors and payload integration, advanced launcher systems, communications/imaging systems, rangecraft, material depot, and range systems.

The Naval Undersea Warfare Center is the Navy's source for undersea systems expertise and technology providing the Navy with innovative, effective and affordable systems and services. If this equipment is not acquired, the Warfare Center will be unable to support and test critical undersea warfare components and provide the Navy with affordable, innovative capabilities to meet future fleet needs. The Warfare Center can expect to incur loss of personnel productivity, decreased customer satisfaction, rapidly escalating maintenance costs, reduced services to the technical community, and technical obsolescence. Not being able to test and evaluate systems early in the development phase will increase the cost to the Navy by increasing development time and at-sea testing. Consequently, the Warfare Center will be unable to protect the fleet and make the necessary contributions to prepare for the future. An economic analysis was performed on all projects equal to or greater than $1M. A cost comparison analysis was performed on all individual projects less than $1M. All non-ADPE projects have an estimated useful life of 10 years and a range of payback periods from 0.5 – 10 years.

Electronic Warfare (EW) Simulator/Stimulator - FY18 $1,600K - Project will procure a transportable EW simulator to provide EW/Information Operations (IO) test and evaluation capabilities to support Development/Operational Tests and EW field tests to mitigate technical risks with regards to advanced technologies for future submarine systems. Current simulators are no longer reliable and cannot support the current operational tempo for testing. The payback period of this investment is 8.0 years for FY18.

Survivability Lab Equipment Upgrade - FY18 $1,357K - Project will procure and install a new HVAC system for Building 114. The ability to control the Survivability Lab's environmental conditions in the high humidity months is critical to Division Newport's ability to conduct Environmental Qualification Testing (EQT). The payback period of this investment is 3.4 years for FY18.

NUWC Continued on next page

Giant Voice SS2000 Federal Commander – FY19 $3,500K - This project will procure and install the SS2000 Federal Commander public address system (a.k.a "The Giant Voice") at DIVNPT which will be capable of broadcasting clear, concise instructions throughout the Division campus. This control system will be used to disseminate critical disaster information in support of OPNAV Instruction 3400.12. The payback period of this investment is 8.3 years for FY19.

Land Based Test & Training Facility for Thin Line Towed Array Handling System – FY20 $2,240K - This project will provide the land based test and training facility for the Thin Line Towed Array Handing System. This facility is necessary to conduct on-site evaluations of the handling system as well as intermediate and operational level training.
The payback period of this investment is 9.3 years for FY20.

Towed Systems Prototyping and Testing Facility Improvements – FY20 $1,630K - The project will enhance NUWC's capability for towed systems prototyping and testing with upgrades to allow modules to flow seamlessly from component fabrication through module assembly, module hosing, and system testing, increasing the efficiency and productivity of the facility. The payback period of this investment is 8.2 years for FY20.

KB Dock Float System Upgrade – FY20 $1,500K - Mooring vessels to the existing degraded float system at the Keyport/Bangor (KB) Dock is becoming a safety and operations concern for both vessels and personnel as the system degrades. This project will implement needed upgrades at KB Dock, SUBASE Bangor to include ship-side utilities management system, attachments to pier piles/cleats/bumpers, and restoring the floats' integrity. The payback period of this investment is 3.2 years for FY20.

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Department of the Navy/ Research and Development	#002 - ADPE						Naval Undersea Warfare Center		
	FY 2018			FY 2019			FY 2020		
ADP Equipment	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Computer Hardware (Production)	4	$0.329	$1.317	4	$0.676	$2.705	6	$0.548	$3.289
Computer Hardware (Network)	6	$0.829	$4.973	2	$0.651	$1.301	2	$0.630	$1.260
Computer Software (Operating System)	0	-	$0.000	1	$0.591	$0.591	0	-	$0.000
Telecommunications	0	-	$0.000	0	-	$0.000	0	-	$0.000
Other Support Equipment	1	$0.029	$0.029	1	$0.531	$0.531	1	$0.600	$0.600
Total	11	$0.574	$6.319	8	$0.641	$5.128	9	$0.572	$5.149

Justification:

These investments will support the acquisition of automated data processing and telecommunications equipment for the undersea research and development. Funds will provide network/connectivity upgrades and procurement of hardware for mission essential research, development, test and evaluation and high speed computing needs.

In order to provide the necessary scientific computer resources at the Naval Undersea Warfare Center, adequate resources must be acquired to meet the research, development, test and evaluation needs. These computational engines, visualization engines and repositories of DoD high performance computer systems are required for engineers and scientists to develop innovative undersea warfare solutions. Replacement of obsolete computer equipment will provide the Warfare Center with more reliable and more cost effective resources which will ensure that the technical areas have the capabilities they need to meet requirements. Increased reliability will reduce maintenance costs, increase overall efficiency, and enhance compatibility throughout the Warfare Center. Investment in equipment will also provide enhanced test and evaluation capabilities which will help the Warfare Center implement technologies and reach back capability that enables forward deployed technical resources to be more efficient and effective.
ADP Equipment supporting the research and development community must remain on the cutting edge of technology to conduct complex simulations, perform predictive analysis, and analyze undersea system performance. The capability to conduct cutting edge scientific computing within the R&D community is in jeopardy if investments are not made. Current equipment supporting mission essential systems will no longer be supported by the manufacturer. Investment in network infrastructure to support RDT&E laboratories at the Warfare Center is required in order to support Fleet customers. Without a network infrastructure in place, the RDT&E laboratories will not be able to function, support their customers or allow the Warfare Center to pursue its mission. If these investments are not made the Navy will be limited in their capability for the shore-based development, integration and testing of new submarine sonar, combat and weapon systems.

An economic analysis was performed on all projects equal to or greater than $1M. A cost comparison analysis was performed on all individual projects less than $1M. ADPE Projects have an average useful life of 5 years according to guidance provided in the OMB A-94 circular. These projects have a range of payback periods from 0.5 - 5.0 years.

NUWC Continued on next page

Building Access Control (Phase III) FY18 $1187K - Project will procure and integrate a system for exterior door access control functionality using Common Access Card (CAC) for high occupancy/mission critical Division Newport buildings and provide a connection to the Security Monitoring Center (SMC). Phase I was conducted in FY15 and Phase II in FY16. Phase III is expected to upgrade the remaining of the high occupancy/mission critical buildings at the Division. The payback period of this investment is 5.0 years for FY18

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Department of the Navy/ Research and Development	#003 - Software Development						Naval Undersea Warfare Center		
	FY 2018			FY 2019			FY 2020		
Software	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Internally Developed	4	$0.295	$1.179	2	$0.530	$1.060	2	$0.555	$1.110
Externally Developed	0	-	$0.000	1	$0.788	$0.788	0	-	$0.000
Total	4	$0.295	$1.179	3	$0.616	$1.848	2	$0.555	$1.110

Justification:

These investments will support the acquisition or development of software for the more effective and efficient operation of navy owned facilities/models.

These investments will directly support the transformation of the Warfare Centers to become a more agile support organization. These investments will improve the Navy's modeling and simulation capabilities and test and evaluation capabilities for submarine networks and systems. These modeling and simulation capabilities also enable the Warfare Centers to be more proactive in developing life-cycle solutions by providing the capability to model end-to-end mission/platform level naval engagements.

Without these investments, the warfare center will be unable to continue development, test and integration of submarine systems in a common, integrated fashion. Undersea warfare models need to be reviewed in light of modern computing architectures and futuristic ASW concepts such as distributed netted systems (DNS) and improved, redesigned, or replaced as appropriate so that NUWC's mission-level USW modeling and analysis capability can be sustained for the next generation of analysis problems. Without these investments, the undersea simulation environment will not be fully equipped for high-level architecture (HLA) operation to support high-fidelity Hardware in the Loop (HWIL) Synthetic Ocean for joint warfighting training operations. Furthermore, the simulation environment will not have the flexibility to tailor training scenarios to any realistic scenario future operational commanders need to intensively prepare for and strategic/tactical analysis. Without investments, programs will continue to invest in unique software solutions leading to higher costs and time to develop and integrate submarine systems into the Fleet.

A cost comparison analysis was performed on all individual projects less than $1M. The useful life for these projects is 5 years and a range of payback periods from .5 – 5.0 years.

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Department of the Navy/ Research and Development	#004 - Minor Construction						Naval Undersea Warfare Center		
	FY 2018			FY 2019			FY 2020		
Minor Construction	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Replacement	1	$0.605	$0.605	1	$4.348	$4.348	1	$1.600	$1.600
New Construction	14	$0.553	$7.740	8	$1.181	$9.450	6	$1.470	$8.820
Environmental Capability	0	-	$0.000	0	-	$0.000	1	$0.745	$0.745
Total	15	$0.556	$8.345	9	$1.533	$13.798	8	$1.396	$11.165

Justification:

Investments in Minor Construction enhance the Naval Warfare Center Mission by developing buildings, structures or other real property. Minor Construction projects will replace obsolete facilities, consolidate operations for productivity increases, provide state of the art processing areas for new R&D missions, and correct environmental deficiencies. Minor construction projects include all costs to deliver a complete and usable project. Minor Construction projects meet the DOD capitalization criteria. The below MCON projects utilize Sec. 2804 of the FY08 National Defense Authorization Act (NDAA) authority for the Lab Revitalization Demonstration Program (LDRP) and authority to correct Life, Safety & Health issues.

Minor Construction is used at the Naval Warfare Centers to:
- modify existing spaces and construct new facilities to provide suitable space to design and test new equipment for the surface warfare community.
- improve security measures and provide increase security for new initiatives
- reduce operating expenses by building or improving government owned facilities so that leased space, high maintenance space, or portable space may be vacated.
- reduce energy consumption by installing energy efficient building systems
- modify existing systems to bring facilities up to current building, safety, or environmental codes.

An economic analysis was performed on all projects equal to or greater than $1M. A cost comparison analysis was performed on all individual projects less than $1M. Projects have an average useful life of 20 years according to guidance provided in the OMB A-94 circular. These projects have a range of payback periods from 2.0 - 20 years.

Building 1319 Upgrades – FY18 $3.800K - This project with construct a 5,000 square foot, two story addition at Building 1319 which will support critical Submarine Electromagnetic Maneuver Warfare projects. The payback period of this investment is 17.0 years for FY18.

Building Restoration - North End Bldg 1 – FY19 - $4,348K - The facility is currently vacant due to it being unsafe and inoperative. This project will renovate and convert the north end of Bldg 1 to usable office space and will accommodate consolidation of the Weapon System Engineering Division near the Torpedo IMA, and allow growth to the Obsolescence Management & In-Service Engineering Division. Facilities has assessed growth requirements and determined recapitalization of this building to be the most cost-effective option to support expanded functions. The payback period of this investment is 17.5 years for FY19.

NUWC Continued on next page

Building 1371 Addition – FY19 - $5,000K - Planned Lab Revitalization Project (R&R) to fund an addition to building 1371 that will provide the enhanced classified facilities needed to support submarine and USW customers. Reduction in overhead will be offset by increased CIP authority. The payback period of this investment is 17.2 years for FY19.

Building 1264 Towed Array Storage Facility – FY19 - $1,350K - This project will construct a 4700 square foot storage facility to accommodate the storage of oil-filled towed array modules. The National Fire Protection Association currently limits the storage volume of combustible liquids and this construction of this facility will remediate a RAC 2 safety deficiency. The payback period of this investment is 6.9 years for FY19.

Building 1320 Addition – FY20 - $5,000K - Planned Lab Revitalization Project (R&R) to fund an addition to building 1320 that will provide the enhanced classified facilities needed to support submarine and USW customers. Reduction in overhead will be offset by increased CIP authority. The payback period of this investment is 17.4 years for FY20.

Secure Storage Facility – FY20 - $1,600K - This project will construct a 5400 square foot, single-story high ceiling building for ordnance storage of multiple types of weapons. DIVNPT currently lacks the oversized, secure storage for the devices. The payback period of this investment is 9.3 years for FY20

Building Restoration - South End Bldg 1 – FY20 - $1,600K - The facility is currently vacant due to it being unsafe and inoperative. This project will renovate and convert the South end of Bldg 1 to usable office space and will accommodate consolidation of the Weapon System Engineering Division near the Torpedo IMA, and allow growth to the Obsolescence Management & In-Service Engineering Division. Facilities has assessed growth requirements and determined recapitalization of this building to be the most cost-effective option to support expanded functions. The payback period of this investment is 18 years for FY20.

CAPITAL BUDGET EXECUTION
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL UNDERSEA WARFARE CENTER
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

FY	Line Item	Category	Capability/Project	Initial Request	Current Proj Cost	Approved Change	Explanation
2018	**1**	**Non ADP**		**$6.507**	**$4.491**	**($2.016)**	
			Vehicles	$0.000	$0.000	$0.000	
			Material Handling	$0.944	$0.599	($0.345)	Funding adjusted as projects were reprioritized.
			Quality Control/Testing	$0.861	$0.486	($0.375)	Funding adjusted as projects were reprioritized.
			Machinery	$0.275	$0.274	($0.001)	Funding adjusted as projects were reprioritized.
			Support Equipment	$4.427	$3.132	($1.295)	Funding adjusted as projects were reprioritized.
	2	**ADP**		**$5.560**	**$6.319**	**$0.759**	
			Computer Hardware (Production)	$2.047	$1.317	($0.730)	Funding adjusted as projects were reprioritized.
			Computer Hardware (Network)	$3.107	$4.973	$1.866	Funding adjusted as projects were reprioritized.
			Computer Software (Operating)	$0.000	$0.000	$0.000	
			Telecommunications	$0.000	$0.000	$0.000	
			Other Support Equipment	$0.406	$0.029	($0.377)	Funding adjusted as projects were reprioritized.
	3	**Software**		**$1.434**	**$1.179**	**($0.255)**	
			Internally Developed	$1.434	$1.179	($0.255)	Funding adjusted as projects were reprioritized.
			Externally Developed	$0.000	$0.000	$0.000	
	4	**Minor Construction**		**$4.962**	**$8.345**	**$3.383**	
			Replacement	$0.260	$0.605	$0.345	Funding adjusted as projects were reprioritized.
			New Construction	$4.702	$7.740	$3.038	Reprogramming/Increased authority
			Environmental Capability	$0.000	$0.000	$0.000	
TOTAL FY 2018 CIP Program				**$18.463**	**$20.334**	**$1.871**	

FY	Line Item	Category	Capability/Project	Initial Request	Current Proj Cost	Approved Change	Explanation
2019	**1**	**Non ADP**		**$5.173**	**$5.936**	**$0.763**	
			Vehicles	$0.700	$0.000	($0.700)	Program restructure
			Material Handling	$0.350	$0.000	($0.350)	Program restructure
			Quality Control/Testing	$0.000	$0.795	$0.795	Program restructure
			Machinery	$0.000	$0.000	$0.000	
			Support Equipment	$4.123	$5.141	$1.018	Program restructure
	2	**ADP**		**$2.926**	**$5.128**	**$2.202**	
			Computer Hardware (Production)	$1.702	$2.705	$1.003	Program restructure
			Computer Hardware (Network)	$1.224	$1.301	$0.077	Program restructure
			Computer Software (Operating)	$0.000	$0.591	$0.591	Program restructure
			Telecommunications	$0.000	$0.000	$0.000	
			Other Support Equipment	$0.000	$0.531	$0.531	Program restructure
	3	**Software**		**$1.283**	**$1.848**	**$0.565**	
			Internally Developed	$0.793	$1.060	$0.267	Program restructure
			Externally Developed	$0.490	$0.788	$0.298	Program restructure
	4	**Minor Construction**		**$7.965**	**$13.798**	**$5.833**	
			Replacement	$2.750	$4.348	$1.598	Program restructure
			New Construction	$4.470	$9.450	$4.980	Program restructure/Increased Authority
			Environmental Capability	$0.745	$0.000	($0.745)	Program restructure
TOTAL FY 2019 CIP Program				**$17.347**	**$26.710**	**$9.363**	

FY	Line Item	Category	Capability/Project	Initial Request	Current Proj Cost	Approved Change	Explanation
2020	**1**	**Non ADP**		**$0.000**	**$8.991**	**$8.991**	
			Vehicles	$0.000	$0.650	$0.650	
			Material Handling	$0.000	$0.000	$0.000	
			Quality Control/Testing	$0.000	$0.000	$0.000	
			Machinery	$0.000	$0.525	$0.525	
			Support Equipment	$0.000	$7.816	$7.816	
	2	**ADP**		**$0.000**	**$5.149**	**$5.149**	
			Computer Hardware (Production)	$0.000	$3.289	$3.289	
			Computer Hardware (Network)	$0.000	$1.260	$1.260	
			Computer Software (Operating)	$0.000	$0.000	$0.000	
			Telecommunications	$0.000	$0.000	$0.000	
			Other Support Equipment	$0.000	$0.600	$0.600	
	3	**Software**		**$0.000**	**$1.110**	**$1.110**	
			Internally Developed	$0.000	$1.110	$1.110	
			Externally Developed	$0.000	$0.000	$0.000	
	4	**Minor Construction**		**$0.000**	**$11.165**	**$11.165**	
			Replacement	$0.000	$1.600	$1.600	
			New Construction	$0.000	$8.820	$8.820	
			Environmental Capability	$0.000	$0.745	$0.745	
TOTAL FY 2020 CIP Program				**$0.000**	**$26.415**	**$26.415**	

CARRYOVER RECONCILIATION
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL UNDERSEA WARFARE CENTER
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	FY 2018	FY 2019	FY 2020
Part 1			
1. Net Carry-In	661.6	677.0	683.6
2. Revenue	1,191.2	1,267.2	1,248.4
3. New Orders	1,206.6	1,273.7	1,242.7
4. Exclusions:			
Foreign Military Sales	53.7	90.8	91.8
Base Realignment and Closure	0.0	0.0	0.0
Other Federal Department and Agencies	4.4	5.9	6.0
Non-Federal and Others	39.1	31.2	30.7
Institutional Major Range & Test Facility Base	76.2	78.3	80.3
OUSD(C) Approved Carryover Waiver	0.0	0.0	0.0
5. Orders for Carryover Calculation	1,033.2	1,067.5	1,033.9
6. Weighted Average Outlay Rate	54.3%	54.3%	54.3%
7. Carryover Rate	45.7%	45.7%	45.7%
8. Allowable Carryover	541.4	560.1	549.3
Allowable Carryover(First Year)	472.2	487.8	472.5
Allowable Carryover (Second Year Procurement-funded Orders)	69.2	72.3	76.8
Part II			
9. Balance of Customer Order at Year End	677.0	683.6	677.9
10. Work-in-progress	0.0	0.0	0.0
11. Exclusions:			
Foreign Military Sales	164.5	152.5	144.1
Base Realignment and Closure	0.0	0.0	0.0
Other Federal Department and Agencies	2.6	3.4	4.2
Non-Federal and Others	50.9	53.7	54.2
Institutional Major Range & Test Facility Base	46.0	48.3	46
OUSD(C) Approved Carryover Waiver	0.0	0.0	0.0
12. Calculated Actuals Carryover	413.0	425.7	429.4

Some totals may not add due to rounding.

6. SPAWAR Systems Center

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NARRATIVE
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT – SPACE AND NAVAL WARFARE SYSTEMS CENTERS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Mission Statement / Overview:

The Space and Naval Warfare Systems Centers (SSCs) bring knowledge superiority to the warfighter. Their mission is to provide Naval, Joint, and National knowledge superiority through quality Research, Development, Test, and Evaluation (RDT&E); to rapidly deploy and provide full cycle support for sustainable, survivable, and interoperable Command, Control, Communication, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR), Information Operations (IO), Enterprise Information Services (EIS) and space capabilities. The Space and Naval Warfare Systems Command (SPAWAR) is the Navy's information dominance systems command, and the SSCs are SPAWAR's principal technical agent. Information dominance is the ability to seize and control the information domain high ground when, where, and however required for decisive competitive advantage across the range of Navy missions.

The SSCs are the C4ISR providers of choice for hundreds of customers throughout Navy and Department of Defense (DoD), and play an important role in the support of related technologies for Homeland Security, the Federal Bureau of Investigation, Department of State, and other federal agencies. As such, the SSCs must maintain innovative scientific and technical expertise, facilities, and the understanding of defense requirements to ensure that the Navy can develop, acquire, and maintain the systems needed to meet customer requirements at an acceptable price. The SSCs provide cradle-to-grave products and services including:

- Warfare systems analysis
- Plan and conduct effective technology programs
- Cost conscious systems engineering and technical support to program managers in all phases of systems development and acquisition
- Test and evaluation support including RDT&E and measurement facilities
- Technical input to the development of operational tactics
- Electronics material support (technical and management) for systems and equipment
- Specialized technical support to the Fleet for quick-reaction requirements

Activity Group Composition:

The SSCs are under the management of SPAWAR. This organizational structure facilitates the entire cycle of systems engineering from research and development through waterfront support. SSC Pacific has its headquarters in San Diego, CA, with offices in Philadelphia, PA; Pearl Harbor, HI; Guam; and Japan. SSC Atlantic has its headquarters in Charleston, SC, with offices in Norfolk, VA, and Washington, DC.

NARRATIVE
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT – SPACE AND NAVAL WARFARE SYSTEMS CENTERS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Significant Changes Since the FY 2019 President's Budget:
The FY 2020 budget estimate includes increases to align resources to projected workload. These increases are primarily attributable to program growth in areas such as Consolidated Afloat Networks and Enterprise Services (CANES)/Installations; Network Security and Cyber; and Sensitive Compartmented Information (SCI) Networks.

Financial Profile:

Orders/Revenue/Expense/Operating Results ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Orders	$2,406.8	$2,591.0	$2,612.8
Revenue	$2,307.8	$2,557.2	$2,612.7
Expense	$2,304.7	$2,562.1	$2,600.2
Operating Results	$3.1	($4.8)	$12.4
Capital Surcharge	($11.5)	($9.8)	($12.0)
Net Operating Results (NOR)	($8.4)	($14.6)	$0.4
Prior Year AOR	$22.6	$14.2	($0.4)
Other Changes Affecting AOR	$0.0	$0.0	$0.0
Accumulated Operating Results (AOR)	$14.2	($0.4)	$0.0

Some totals may not add due to rounding.

Orders, Revenue and Expense: Changes in orders from FY 2018 to FY 2020 are based on updated new orders estimates as coordinated with customers. Contributing to the change in revenue and expense from FY 2018 to FY 2020 are changes in civilian labor estimates required to support anticipated customer workload. Other changes to revenue and expense are a result of inflation and pricing. In addition, the capital surcharges in FY 2018, FY 2019, and FY 2020 support vital Capital Investment Program (CIP) projects and support additional Naval Innovative Science and Engineering (NISE) investments for Defense Laboratory Revitalization Program (LRDP).

Collections/Disbursements/Outlays ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Collections	$2,334.0	$2,474.0	$2,581.2
Disbursements	$2,281.3	$2,531.0	$2,559.8
Outlays	($52.7)	$57.0	($21.4)

Some totals may not add due to rounding.

Current net outlay projections reflect changes in workload and updated operating estimates.

NARRATIVE
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT – SPACE AND NAVAL WARFARE SYSTEMS CENTERS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Workload:

Direct Labor Hours (000):	**FY 2018**	**FY 2019**	**FY 2020**
Current Estimate	10,702	11,041	11,162

The rates are based on Direct Labor Hours (DLHs) required for stabilized workload. The changes in direct labor hour estimates relate to supporting customer workload efforts and growth in hours due to one more workday in FY 2020.

Performance Indicators: The SSCs' outputs are scientific and engineering designs, developments, tests, evaluations, analyses, installations, and fleet support for systems in their mission areas. The measure for these outputs is the direct labor hour worked for a customer. Customers are charged a predetermined stabilized billing rate per direct employee hour worked. The revenue rate includes the salary and benefits costs of the performing employee (direct labor costs) and a share of the overhead costs of the SSCs, both general and administrative support and the unique production overhead costs of the performing employee's cost center. Non-labor, non-overhead costs, such as customer required material and equipment purchases, travel expenses, and contractual services, are charged to the customer on an actual cost reimbursable basis, and are excluded from the SSCs' stabilized pricing structure. The SSCs use total stabilized cost per direct labor hour as their performance criterion.

Unit Cost:	**FY 2018**	**FY 2019**	**FY 2020**
Total Stabilized Cost ($Millions)	$1,246.6	$1,269.0	$1,286.4
Workload (DLHs) (000)	10,702	11,041	11,162
Unit cost (per DLH)	$116.48	$114.94	$115.25

The Unit Cost is the method established to authorize and control costs. Unit cost goals allow activities to respond to workload changes in execution by encouraging reduced costs when workload declines and allowing appropriate increases in costs when customers request additional services. FY 2020 unit cost reflects stabilized costs per associated stabilized hours as an expense rate.

Stabilized / Composite Rates:	**FY 2018**	**FY 2019**	**FY 2020**
Stabilized Rate	$114.56	$114.72	$116.46
Change from Prior Year		0.14%	1.52%
Composite Rate Change		0.95%	1.77%

The Stabilized Rate consists of direct labor and applied overhead. Unique direct non-labor costs are billed on a reimbursable basis to the customer. The composite rate change incorporates both the stabilized costs and the reimbursable costs. The composite rate change in FY 2020 reflects adjustments to direct workload, pricing changes, and includes Naval Innovative Science and Engineering (NISE) funding in compliance with 10 USC 2363.

Staffing:

Civilian/Military ES & Workyears:	**FY 2018**	**FY 2019**	**FY 2020**
Civilian End Strength	8,987	9,002	9,002
Civilian Workyears (straight time)	8,623	8,829	8,861
Military End Strength	81	77	77
Military Workyears	67	77	77

Civilian Personnel: Civilian strength levels, measured by both end strength and full-time equivalents (FTEs) remain steady in FY 2020.

Military Personnel: The Military resource estimates are a baseline projection of military personnel necessary to fulfill programming objectives and coordination with customers. Military resource estimates have been adjusted to reflect a balanced program of military resources to funded workload and remain steady in FY 2020.

Capital Investment Program (CIP) Authority ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Equipment, Non-ADP / Telecom	$1.2	$0.0	$0.0
Equipment, ADPE / Telecom	$2.6	$2.4	$2.5
Software Development	$2.1	$0.0	$0.0
Minor Construction	$15.6	$15.1	$16.8
Total	$21.5	$17.5	$19.3

Some totals may not add due to rounding.

The Capital Investment Program allows the NWCF to achieve its mission by reinvesting in plant equipment and facilities. Included in the capital budget are the following types of assets: Automated Data Processing Equipment (ADPE); non-ADPE; automated data processing software, internally or externally developed; and minor construction. Minor construction includes projects meeting the criteria of the Laboratory Revitalization Program (LRP). The projects will replace aging temporary buildings and upgrade and expand lab capability to accommodate workload growth and increase efficiency.

NARRATIVE
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT – SPACE AND NAVAL WARFARE SYSTEMS CENTERS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Carryover Compliance: (Millions)	**FY 2018**	**FY 2019**	**FY 2020**
Net Carry-In	$1,103.7	$1,202.7	$1,236.5
Allowable Carryover	$1,099.5	$1,198.5	$1,215.4
Calculated Actual Carryover	$973.0	$907.7	$884.0
Delta (Actual-Allowable): Above Ceiling (+)/Below Ceiling (-)	($126.5)	($290.8)	($331.4)

Some totals may not add due to rounding.

Carryover for each year is within the allowable carryover ceiling.

REVENUE AND EXPENSES
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - SPACE AND NAVAL WARFARE SYSTEMS CENTERS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	FY 2018	FY 2019	FY 2020
Revenue:			
Gross Sales			
Operations	2,290.2	2,539.7	2,593.4
Capital Surcharges	11.5	9.8	12.0
Capital Investment Recovery	6.1	7.7	7.3
Other Income			
Total Income	2,307.8	2,557.2	2,612.7
Expenses			
Cost of Materiel Sold from Inventory			
Salaries and Wages:			
Military Personnel Compensation & Benefits	7.9	7.7	7.8
Civilian Personnel Compensation & Benefits	1258.5	1296.2	1306.7
Travel and Transportation of Personnel	55.6	53.4	54.4
Material & Supplies (Internal Operations)	204.1	147.4	150.7
Equipment	141.7	166.4	170.2
Other Purchases from NWCF	22.7	22.7	22.3
Transportation of Things	6.3	6.1	6.2
Capital Investment Recovery	6.1	7.7	7.3
Printing and Reproduction	0.4	0.2	0.2
Advisory and Assistance Services	0.0	0.0	0.0
Rent, Communication, Utilities & Misc Charges	30.8	32.7	33.5
Other Purchased Services	570.6	821.5	840.8
Total Expenses	2304.7	2562.1	2600.2
Work in Process Adjustment	0.0	0.0	0.0
Comp Work for Activity Retention Adjustment	0.0	0.0	0.0
Cost of Goods Sold	2,304.7	2,562.1	2,600.2
Operating Result	3.1	-4.8	12.4
Adjustments Affecting NOR	-11.5	-9.8	-12.0
Capital Surcharges	-11.5	-9.8	-12.0
Extraordinary Expenses Unmatched	0.0	0.0	0.0
Other Changes Affecting NOR (All Others)	0.0	0.0	0.0
Net Operating Result	-8.4	-14.6	0.4
PY AOR	22.6	14.2	-0.4
TOTAL AOR	14.2	-0.4	0.0
Non-Recoverable Adjustments impacting AOR	0.0	0.0	0.0
AOR for budget purposes	14.2	-0.4	0.0

SOURCES OF NEW ORDERS & REVENUE
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - SPACE AND NAVAL WARFARE SYSTEMS CENTERS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	FY 2018	FY 2019	FY 2020
1. New Orders	2,406.8	2,591.0	2,612.8
a. Orders from DoD Components:	2,067.2	2,259.7	2,274.4
Department of the Navy	1,614.7	1,849.2	1,844.8
O & M, Navy	550.2	629.9	647.8
O & M, Marine Corps	79.3	91.9	92.0
O & M, Navy Reserve	6.4	6.1	6.9
O & M, Marine Corp Reserve	0.2	0.4	0.4
Aircraft Procurement, Navy	16.0	12.3	14.8
Weapons Procurement, Navy	0.3	0.2	0.2
Ammunition Procurement, Navy/MC	-	0.0	-
Shipbuilding & Conversion, Navy	81.4	104.7	102.9
Other Procurement, Navy	486.8	552.7	545.5
Procurement, Marine Corps	48.8	44.1	43.1
Family Housing, Navy/MC	0.8	1.1	1.1
Research, Dev., Test, & Eval., Navy	344.3	404.8	389.1
Military Construction, Navy	0.3	0.2	0.1
National Defense Sealift Fund	0.1	-	-
Other Navy Appropriations	-	0.9	1.0
Other Marine Corps Appropriations	-	-	-
Department of the Army	37.9	42.6	38.6
Army Operation & Maintenance	14.5	19.5	16.3
Army Res, Dev, Test, Eval	14.1	13.3	13.5
Army Procurement	8.9	7.3	6.2
Army Other	0.4	2.5	2.5
Department of the Air Force	87.9	88.0	124.7
Air Force Operation & Maintenance	50.3	45.3	53.2
Air Force Res, Dev, Test, Eval	33.9	37.5	67.1
Air Force Procurement	3.7	5.1	4.4
Air Force Other	0.0	0.2	-
DOD Appropriation Accounts	326.7	279.9	266.3
Base Closure & Realignment	0.4	-	-
Operation & Maintenance Accounts	99.9	86.1	81.5
Res, Dev, Test & Eval Accounts	149.4	101.3	94.5
Procurement Accounts	23.3	27.8	24.2
Defense Emergency Relief Fund	-	-	-
DOD Other	54.5	64.7	66.2
b. Orders from other Fund Activity Groups	117.5	124.5	123.1
c. Total DoD	2,184.7	2,384.2	2,397.5
d. Other Orders:	222.1	206.8	215.3
Other Federal Agencies	140.0	127.7	130.0
Foreign Military Sales	55.8	53.5	56.9
Non Federal Agencies	26.3	25.6	28.4
2. Carry-In Orders	1,103.7	1,202.7	1,236.5
3. Total Gross Orders	3,510.5	3,793.8	3,849.4
a. Funded Carry-Over before Exclusions	1,202.7	1,236.5	1,236.7
4. Revenue(-)	2,307.8	2,557.2	2,612.7
5. End of Year Work-In-Process (-)	-	-	-
6. FMS, BRAC, Other Federal, Non-Federal orders, and Inst. MRTFB (-)	229.7	328.8	352.6
7. Funded Carryover	973.0	907.7	884.0

Note: Line 5 (End of Year Work-In-Process) is adjusted for Non-DOD BRAC, FMS, and Institutional MRTFB

CHANGES IN THE COSTS OF OPERATIONS
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - SPACE AND NAVAL WARFARE SYSTEMS CENTERS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	Costs
FY 2018 Actuals	**2,304.7**
FY 2019 President's Budget:	**2,333.7**
Estimated Impact in FY 2019 of Actual FY 2018 Experience:	**0.0**
Pricing Adjustments:	**2.4**
General Inflation	2.4
Fuel Price	0.1
Program Changes:	**223.8**
Consolidated Afloat Networks & Enterprise Services (CANES)/Installations	117.3
Joint Base Application Transition to Data Center	24.6
Network Security and Cyber	15.7
Sensitive Compartmented Information (SCI) Networks	10.8
Engineering Sustainment and Modernization for Coast Guard	7.8
Tailored Advanced Intelligence, Surveillance, Reconnaissance	7.3
Test Bed Infrastructure Development, Engineering, Evaluation, and Prototype	7.2
Air Traffic Control	5.0
Electronic Warfare Technologies	4.6
Emergency Response System for Marine Corps	3.6
Automated Digital Network System	3.1
Wireless Network Communications Infrastructure for Marine Corps	2.9
Defense Advanced Research Projects Agency (DARPA)	2.9
Joint Strike Fighter	2.9
Technical integration support for the Coast Guard	2.1
Defense Information Services Agency (DISA) Mobility	2.1
Communications Data Distribution Modular System for Marine Corps	1.5
Pay & Personnel Modernization System	0.9
Advanced Analytics	0.7
DISA Joint Worldwide Intelligence Communications System (JWCIS)	0.7
Other Changes:	**2.1**
Naval Innovative Science and Engineering (NISE) Increase to 2%	6.4
NISE in CIP	-4.3
FY 2019 Current Estimate:	**2,562.1**
Pricing Adjustments:	**25.1**
Annualization of Prior Year Pay Raises	**0.1**
Civilian Personnel	0.0
Military Personnel	0.1
FY 2020 Pay Raise	**0.1**
Civilian Personnel	0.0
Military Personnel	0.1
Fuel Price Changes	0.0
General Purchase Inflation	24.1
Other Price Changes	**0.8**
Working Capital Fund Price Changes	0.8
Program Changes:	**7.0**
Consolidated Afloat Networks & Enterprise Services (CANES)/Installations	2.8
Network Security and Cyber	1.8
Communications Data Distribution Modular System for Marine Corps	1.8
Defense Information Services Agency (DISA) Mobility	0.7
Other	-0.1
Other Changes:	**6.1**
Change in work days	5.0
Data Center funds redistribution to customers	1.5
Capital Investment Recovery	-0.4
FY 2020 Estimate:	**2,600.2**

CAPITAL INVESTMENT SUMMARY
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - SPACE AND NAVAL WARFARE SYSTEMS CENTERS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

		FY 2018		FY 2019		FY 2020	
Line #	Description	Quantity	Total Cost	Quantity	Total Cost	Quantity	Total Cost
1	**Non-ADPE and Telecom Equipment >= $.500M**	**2**	**$1.161**	**0**	**$0.000**	**0**	**$0.000**
	- Vehicles	0	$0.000	0	$0.000	0	$0.000
	- Material Handling	0	$0.000	0	$0.000	0	$0.000
	- Installation Security	0	$0.000	0	$0.000	0	$0.000
	- Quality Control/Testing	0	$0.000	0	$0.000	0	$0.000
	- Medical Equipment	0	$0.000	0	$0.000	0	$0.000
	- Machinery	0	$0.000	0	$0.000	0	$0.000
	- Support Equipment	2	$1.161	0	$0.000	0	$0.000
2	**ADPE and Telecom Equipment >= $.500M**	**2**	**$2.605**	**2**	**$2.400**	**1**	**$2.500**
	- Computer Hardware (Production)	1	$0.605	0	$0.000	0	$0.000
	- Computer Hardware (Network)	1	$2.000	2	$2.400	1	$2.500
	- Computer Software (Operating)	0	$0.000	0	$0.000	0	$0.000
	- Telecommunications	0	$0.000	0	$0.000	0	$0.000
	- Other Support Equipment	0	$0.000	0	$0.000	0	$0.000
3	**Software Development >= $.500M**	**2**	**$2.150**	**0**	**$0.000**	**0**	**$0.000**
	- Internally Developed	1	$0.750	0	$0.000	0	$0.000
	- Externally Developed	1	$1.400	0	$0.000	0	$0.000
4	**Minor Construction (>= $.500M and <= $6.000M)**	**8**	**$15.571**	**5**	**$15.108**	**6**	**$16.819**
	- Replacement Capability	1	$1.789	3	$7.672	3	$4.119
	- New Construction	7	$13.782	2	$7.436	3	$12.700
	- Environmental Capability	0	$0.000	0	$0.000	0	$0.000
	Grand Total	**14**	**$21.487**	**7**	**$17.508**	**7**	**$19.319**
	Total Capital Outlays		**$10.826**		**$9.019**		**$14.728**
	Total Capital Investment Recovery		**$6.058**		**$7.708**		**$7.319**

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Department of the Navy/ Research and Development	#001 - Non-ADPE						Space and Naval Warfare Systems Centers		
	FY 2018			FY 2019			FY 2020		
Non-ADP Equipment	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Vehicles	0	-	$0	0	-	$0	0	-	$0
Material Handling	0	-	$0	0	-	$0	0	-	$0
Installation Security	0	-	$0	0	-	$0	0	-	$0
Quality Control/ Testing	0	-	$0	0	-	$0	0	-	$0
Medical Equipment	0	-	$0	0	-	$0	0	-	$0
Machinery	0	-	$0	0	-	$0	0	-	$0
Support Equipment	2	581	$1,161	0	-	$0	0	-	$0
Total	2	581	$1,161	0	-	$0	0	-	$0

Justification:

PROJECTS UNDER $1M

The investments in the support equipment capability will provide a low temperature (below 20mili-Kelvin) cryogenic dilution refrigerator and an anechoic chamber/antenna measurement. The cryogenic dilution refrigerator is required for quantum applications. Quantum information allows for high accuracy targeting, unbreakable encryption, navigation, etc. This transformative technology provides a decisive tactical advantage of high importance to the warfighter. The anechoic chamber supports information warfare by providing quantitative performance data. The chamber is an integral test site used for US Navy shipboard antenna performance measurements and supports new research & development and production efforts. The anechoic chamber enhances the present capabilities of the antenna design and experimental verification efforts of countless programs within the Navy and DoD. A cost analysis has been performed. If these investments are not made, there will be delay in the deployment of quantum systems to the fleet, and inconsistencies in antenna characterization will directly impact the accuracy of the products used by Navy and DoD customers.

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Department of the Navy/ Research and Development	#002 - ADPE						Space and Naval Warfare Systems Centers		
	FY 2018			FY 2019			FY 2020		
ADP Equipment	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Computer Hardware (Production)	1	605	$605	0	-	$0	0	-	$0
Computer Hardware (Network)	1	2,000	$2,000	2	1,200	$2,400	1	2,500	$2,500
Computer Software (Operating System)	0	-	$0	0	-	$0	0	-	$0
Telecommunications	0	-	$0	0	-	$0	0	-	$0
Other Support Equipment	0	-	$0	0	-	$0	0	-	$0
Total	2	1,303	$2,605	2	1,200	$2,400	1	2,500	$2,500

Justification:

PROJECTS UNDER $1M

The investment in the computer hardware (production) capability will enable efficient wideband Radio Frequency (RF) testing, recording, and analysis to be performed in house. This project provides a cost efficient test environment that not only reduces cost for programs in development, testing, and evaluation, but also reduces technical risk. A cost analysis has been performed. If this investment is not made, outsourcing efforts and costly field testing would result.

PROJECTS ABOVE $1M

The "**Research, Development, Test & Evaluation (RDT&E) Network Security Infrastructure Upgrade**" project in FY18 in the computer hardware (network) capability will provide a greater throughput for the unclassified RDT&E Network out to the Defense Research and Engineering Network (DREN) service provider in support of mission requirements. An economic analysis has been performed. The DREN network throughput and bandwidth infrastructure is a critical component that directly supports the Navy Research and Development Establishment (NR&DE) cloud efforts. If this investment is not made, it would result in a limited network throughput that limits the technical efforts required to support the warfighter.

The "**Secret Wide Area Network (SWAN) Crypto Refresh**" project in FY19 in the computer hardware (network) capability will provide encryptors for the SWAN and the Secure Defense Research and Engineering Network (SDREN). The current encryptors do not support requirements because the encryptors are nearing their end of life and bandwidth is an issue. Therefore, the encryptors must be upgraded. A solution that will sustain network and security growth ten years into the future is required. An economic analysis has been performed. If this investment is not made, bandwidth growth will not be met, and network management of encryptors will remain as a time-intensive manual process.

The "**Research, Development, Test & Evaluation (RDT&E) Network Upgrade**" project in FY19 in the computer hardware (network) capability will provide a technical refresh for the RDT&E network to support emerging requirements and to improve scalability and recoverability. An economic analysis has been performed. If this investment is not made, the RDT&E network would be limited in its capability to support the requirements of the warfighter.

The "**Research, Development, Test & Evaluation (RDT&E) Network Security Infrastructure Upgrade**" project in FY20 in the computer hardware (network) capability will provide a tech refresh/upgrade of RDT&E network security infrastructure as well as the core infrastructure. Various network devices will be required to support advances in technology and expanded security requirements. The RDT&E network supports technical efforts, which support the warfighter. An economic analysis has been performed. If this investment is not made, the RDT&E network security infrastructure and core infrastructure would remain in its current state, which will cause increased maintenance costs and server outages that would put the network at risk.

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Department of the Navy/ Research and Development	#003 - Software Development						Space and Naval Warfare Systems Centers		
	FY 2018			FY 2019			FY 2020		
Software	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Internally Developed	1	750	$750	0	-	$0	0	-	$0
Externally Developed	1	1,400	$1,400	0	-	$0	0	-	$0
Total	2	1,075	$2,150	0	-	$0	0	-	$0

Justification:

PROJECTS UNDER $1M

The investment in the internally developed capability provides a net-centric and secure enterprise information environment that allows stakeholders to collaborate, evaluate, and participate in the development, testing, and qualifications of Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) software products. This increases the ability to rapidly develop and deploy software capabilities and reduces the product life cycle costs. A cost analysis has been performed. If this investment is not made, the delivery of high quality C4ISR software capabilities cannot be accelerated, preventing product life cycle cost reduction.

PROJECTS ABOVE $1M

The "**Scalable Workflow Automation Tool (SWAT)**" project in FY18 will expand and mature the process and technical capabilities by providing a scalable workflow automation tool to support the internal business operations. This effort will enable the stand down of redundant tools to standardize the processes and data utilized across the command. An economic analysis has been performed on this project. There are no license fees associated with this project at this time. If the investment is not made, there would be limited capability to adequately integrate standardized data, which would hinder data integrity and the streamlined data-driven decision making necessary to effectively support projects in operations.

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Department of the Navy/ Research and Development	#004 - Minor Construction						Space and Naval Warfare Systems Centers		
	FY 2018			FY 2019			FY 2020		
Minor Construction	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Replacement	1	1,789	$1,789	3	2,557	$7,672	3	1,373	$4,119
New Construction	7	1,969	$13,782	2	3,718	$7,436	3	4,233	$12,700
Environmental Capability	0	-	$0	0	-	$0	0	-	$0
Total	8	1,946	$15,571	5	3,022	$15,108	6	2,803	$16,819

Justification:

All projects are within the $6 million threshold for minor construction afforded by the Laboratory Revitalization Program (LRP).

REPLACEMENT

PROJECTS UNDER $1M

The investment in the replacement capability will provide additional bathrooms to accommodate additional personnel and improve productivity. Without this investment, building occupants will continue to work with limited restroom facilities.

PROJECTS ABOVE $1M:
The "**Unmanned Systems (UxS) Integration Lab"** project is in FY18. The project will convert 3,200 square feet (SF) of storage space into an Unmanned Systems (UxS) Integration Lab. The lab will co-locate multiple technologies and competencies in a coordinated and synthesized effort that will reduce time and cost to bring advanced capabilities to the warfighter. In addition, it will allow for rapid prototyping of UxS payloads and autonomy science and technology efforts, which are not available in current infrastructure. An economic analysis has been completed. Without this lab, there will be an inability to keep pace with the rapidly expanding UxS arena and warfighter needs. This project is part of the Lab Revitalization Program (LRP).

The **"Nanosat Integration Center of Excellence"** project is in FY19. Development of the Nanosat Integration Center of Excellence (COE) project will enable the Navy to rapidly respond to warfighter needs by designing and integrating nanosat payloads. Nanosatellites are an emerging low-cost space technology that may increase the resilience of U.S. space capabilities. Future nanosatellites will provide capabilities in communications, intelligence, surveillance, reconnaissance, environmental monitoring, and other missions. Nanosatellites make use of Commercial Off-The-Shelf (COTS) components with less complex modular designs, making them affordable. They can deliver capabilities at significantly lower development costs than conventional satellites. The nanosat modular designs afford more flexibility to the warfighter, enabling developers to quickly address rapidly evolving warfighter needs. Nanosats can be launched affordably in larger numbers. Integrating nanosatellites in-house will shorten development time, provide increased government oversight for improved cyber resiliency, decrease reliance on the private industry, and considerably reduce costs for the Navy and the warfighter. An economic analysis has been completed. Without this effort, continued use of off-site testing facilities will result in an increased cost to Navy/DoD sponsors. This project is part of the Lab Revitalization Program (LRP).

The "**Building 3458 Software Defined Radio Solutions (SDRS) Integrated Product Team (IPT) Laboratory Support**" project is in FY19. Building 3458 was constructed in 1918. Building 3458 houses personnel supporting several radio and Wideband Networking Waveform (WNW) programs. The project will upgrade the building by installing two bathrooms, upgrading the fire protection system, Heating, Ventilation, and Air Conditioning (HVAC) system, electrical, communication system, and IT infrastructure. An Americans with Disabilities Act (ADA) accessible ramp and parking space will also be installed. Additional improvements will include replacement of wall and floor surfaces, replacement of cable lighting, and other space improvements. Upgrades to the HVAC system will provide additional HVAC capacity and airflow distribution for associated spaces. An economic analysis has been performed. Without the upgrades to the building, improved productivity as a result of these upgrades will not be realized. This project is part the Laboratory Revitalization Program (LRP).

The "**Building 3414 Special Security Office (SSO) Research, Development, Test and Evaluation (RDT&E) Laboratory Support**" project is in FY19. The project will upgrade the building's interior spaces, to include electrical, mechanical, communications systems, and utility upgrades. Building 3414 is a Sensitive Compartmented Information Facilities (SCIF) that houses the Special Programs Oversight and Compliance Functions. An economic analysis has been performed. Without the upgrades, improved productivity as a result of these upgrades will not be realized.

The **"Building 3113 Integrated Project Team (IPT) Engineering Space Renovation"** project is in FY20. The project will include upgrading the electrical, communications, Heating, Ventilation, and Air Conditioning (HVAC) systems and other space improvements. Building 3113 houses the Integrated Project Team (IPT) Engineering personnel. An economic analysis has been performed. Without the upgrades to the existing facility enhanced efficiencies, capabilities, and improved productivity will not be realized.

The "**Seaside Electrical Power/Heating, Ventilation and Air Conditioning (HVAC) Upgrade**" project is in FY20. This project will upgrade the Heating, Ventilation, and Air Conditioning (HVAC) in the Combined Test Bed (CTB) lab space to support the centralized computer room and planned systems for critical mission requirements. These upgrades are vital and are required to sustain and integrate new capabilities achieved by modernizing and optimizing laboratory equipment, functions, and operations. The power/HVAC upgrade will create an infrastructure that will reduce lab operating costs and optimize available equipment space. It will also allow for co-location of C4I systems in a state of the art facility for integration, testing, system engineering, and technology demonstration. An economic analysis has been performed. If this investment is not made, the CTB lab space will not be able to integrate new capabilities and technology for critical mission requirements. This project is part of the Lab Revitalization Program (LRP).

NEW CONSTRUCTION

No existing facilities currently support the necessary new mission capability. A cost/economic analysis has been performed for all projects.

PROJECTS UNDER $1M

The investments in new construction will provide solutions to address deficiencies in buildings and structures to meet mission efforts such as providing stable, uninterrupted power to facilities by constructing an electrical substation, constructing a new server room, etc. Without these investments, buildings will lack additional electrical capacity causing projects to run at reduced capacity, negatively impacting cost, schedule, and performance.

PROJECTS ABOVE $1M:

The **"Building 198 Expeditionary Systems Integration Laboratory"** project is in FY18. Building 198 is an electrical, electronics & communications integration lab, commonly known as the Vehicle Integration Bay (VIB). The VIB program is gradually being phased out and will transition to an interactive, collaborative, and flexible Digital Information Facility (DIF). The DIF work environments will range from informal to private communication areas, promoting mobility, collaboration, increased speed in decision-making, and drive collective innovation. The DIF transition will require infrastructure changes to be made to the building's fire protection system, the Heating, Ventilation, and Air Conditioning (HVAC) system, and the overall electrical and IT infrastructure to improve operational efficiency. In addition, the project will include construction of new walls for a reconfigurable laboratory space, an IT server room, and shipping and receiving area. The improvements made to the infrastructure will provide proper airflow distribution for associated spaces, additional HVAC capacity, and additional electrical distribution capacity such as Uninterruptible Power Supply (UPS) and generator power. Reconfiguration of the space will provide a laboratory platform in support of the systems used by the Marine Corps and Expeditionary forces. An economic analysis has been performed. Without the infrastructure changes and reconfiguration, the facility will operate at less than maximum efficiency and productivity and will continue to have areas that are underutilized. This project is part of the Laboratory Revitalization Program (LRP).

The "**Building 3410 Command Center Integration Facility**" project is in FY18. Building 3410 was constructed in 1941. It was originally built as a warehouse and was eventually converted to laboratory space with an interior secure space. The overhaul of this building will greatly enhance its functionality and provide additional efficiency and capability to meet the commitments made to the customers. A cost analysis has been performed. Without the overhaul of the whole building, the additional efficiency and capability to meet customer needs will not be realized. This project is part of the Lab Revitalization Program (LRP).

The "**Computation and Analysis Laboratory Addition**" project is in FY18. This project will provide a 3,400 square foot (SF) building addition for Computation and Analysis Laboratory space. This lab will support research and development and test and evaluation in the areas of information processing and data handling for Naval systems. This laboratory space is essential to keep pace with warfighter needs as one of the Navy's foremost labs for developing and fielding integrated technologies for Intelligence, Surveillance, and Reconnaissance (ISR) sensors, payloads, and full-spectrum Command and Control. Current facilities and infrastructure cannot meet the demand signal for advancement and delivery of these technologies. An economic analysis has been performed. If this investment is not made, technology advancement will be hampered and slowed due to the lack of proper space that can support new technology. This project is part of the Laboratory Revitalization Program (LRP).

The "**Advanced Intelligence, Surveillance, Reconnaissance (ISR) Lab** " project is in FY19. This project will construct a new building and substation. The new facility will support development and integration of advanced Intelligence, Surveillance, and Reconnaissance (ISR) payloads into Unmanned Aerial Vehicles (UAVs). There are no available facilities of sufficient size or capabilities that can support this increased requirement. An economic analysis has been performed. If this investment is not made, the ability to meet mission requirements in this area will be limited. The ability to provide warfighters with meaningful information and intelligence to allow them to make better decisions on a shorter timeline is critical to Naval information warfare. This project is part of the Laboratory Revitalization Program (LRP).

The "**SPAWAR Atlantic Unmanned Systems Research (SAUSR) Range Network & Site Infrastructure Enhancements**" project is in FY19. This project will establish network, site infrastructure, and electrical power to the site that is required for the connection to numerous systems including the testing of flying autonomous vehicles. An economic analysis has been performed. If this investment is not made, the necessary land, air, space, telecom, and electrical required to support the Navy, DoD, and federal systems including autonomous systems would not be realized.

The **"Command, Control, Communication, Computers, Cyber-Defense and Combat Systems and Intelligence, Surveillance and Reconnaissance (C6ISR) Laboratory"** project is in FY20. It will replace the existing Building 3456 that was constructed as a warehouse in 1918 and was converted to a laboratory space. The facility is in need of a complete replacement due to its age, condition, and current configuration. This project will construct a Sensitive Compartmented Information Facility (SCIF) with administrative spaces and secret laboratory areas. Appropriate Heating, Ventilation, and Air Conditioning (HVAC), plumbing, lighting, and electrical systems will be included along with handicap accessibility throughout the building. Once the new facility is complete, building 3456 will be demolished. An economic analysis has been performed. Without replacement, the existing aged building, HVAC, plumbing, lighting, electrical systems, and current configuration will hinder the functionality necessary to support the laboratory projects in operation. This project is part of the Laboratory Revitalization Program (LRP).

The "**Seaside Back Up Power**" project is in FY20. The Systems Integration Test and Evaluation building requires back-up power to support Continuity of Operations (CoOP) in the event of loss of power. Requirements include back-up power that supports the water plant that provides cooling for the System Integration Test and Evaluation building. Currently there is no back-up power source, causing a significant risk to mission essential/critical equipment. Laboratories within the Systems Integration Test & Evaluation building deliver critical capabilities to the warfighter. An economic analysis has been completed. If this investment is not made, projects that operate within that space would have a significant risk to test bed infrastructure due to loss of ability to support CoOP. This poses a significant risk to the safety of equipment, as well as to the support of operational testing events. This project is part of the Laboratory Revitalization Program (LRP).

The "**Machine Learning/Artificial Intelligence Laboratory**" project is in FY20. This project will provide a 5,000 square feet (SF) space. Existing facilities are degraded and state-of-the-art facilities are required to meet mission requirements. Machine learning and artificial intelligence are integral to modernizing key capabilities to support the Department of Navy's mission and the National Defense Strategy. Machine learning and artificial intelligence are foundational for rapid warfighting decision making and provide the science behind enhanced autonomous systems. Additionally, the project and the work performed in the space support the workforce with modern critical expertise. An economic analysis has been performed. If this investment is not made, the existing facilities will be unable to meet the demand of this expanding technical growth area for rapid warfighting decision making. This project is part of the Laboratory Revitalization Program (LRP).

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CAPITAL BUDGET EXECUTION
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - SPACE AND NAVAL WARFARE SYSTEMS CENTERS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

FY	Line Item	Category	Capability/Project	Initial Request	Current Proj Cost	Approved Change	Explanation
2018	**1**	**Non ADP**		**$0.000**	**$1.161**	**$1.161**	
			Support Equipment	$0.000	$1.161	$1.161	Funding adjusted as projects were reprioritized.
	2	**ADP**		**$3.805**	**$2.605**	**($1.200)**	
			Computer Hardware (Production)	$0.605	$0.605	$0.000	
			Computer Hardware (Network)	$3.200	$2.000	($1.200)	Funding adjusted as projects were reprioritized.
	3	**Software**		**$2.150**	**$2.150**	**$0.000**	
			Internally Developed	$0.400	$0.750	$0.350	Funding adjusted as projects were reprioritized.
			Externally Developed	$1.750	$1.400	($0.350)	Funding adjusted as projects were reprioritized.
	4	**Minor Construction**		**$14.146**	**$15.571**	**$1.425**	
			Replacement	$1.495	$1.789	$0.294	Funding adjusted as projects were reprioritized.
			New Construction	$12.651	$13.782	$1.131	Funding adjusted as projects were reprioritized.
TOTAL FY 2018 CIP Program				**$20.101**	**$21.487**	**$1.386**	

FY	Line Item	Category	Capability/Project	Initial Request	Current Proj Cost	Approved Change	Explanation
2019	**1**	**Non ADP**		**$0.000**	**$0.000**	**$0.000**	
	2	**ADP**		**$2.400**	**$2.400**	**$0.000**	
			Computer Hardware (Network)	$2.400	$2.400	$0.000	
	3	**Software**		**$0.000**	**$0.000**	**$0.000**	
	4	**Minor Construction**		**$10.808**	**$15.108**	**$4.300**	
			Replacement	$2.408	$7.672	$5.264	Funding adjusted as projects were reprioritized.
			New Construction	$8.400	$7.436	($0.964)	Funding adjusted as projects were reprioritized.
TOTAL FY 2019 CIP Program				**$13.208**	**$17.508**	**$4.300**	

FY	Line Item	Category	Capability/Project	Initial Request	Current Proj Cost	Approved Change	Explanation
2020	**1**	**Non ADP**		**$0.000**	**$0.000**	**$0.000**	
	2	**ADP**		**$2.500**	**$2.500**	**$0.000**	
			Computer Hardware (Network)	$2.500	$2.500	$0.000	
	3	**Software**		**$0.000**	**$0.000**	**$0.000**	
	4	**Minor Construction**		**$16.819**	**$16.819**	**$0.000**	
			Replacement	$4.119	$4.119	$0.000	
			New Construction	$12.700	$12.700	$0.000	
TOTAL FY 2020 CIP Program				**$19.319**	**$19.319**	**$0.000**	

CARRYOVER RECONCILIATION
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - SPACE AND NAVAL WARFARE SYSTEMS CENTERS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	FY 2018	FY 2019	FY 2020
Part 1			
1. Net Carry-In	1,103.7	1,202.7	1,236.5
2. Revenue	2,307.8	2,557.2	2,612.7
3. New Orders	2,406.8	2,591.0	2,612.8
4. Exclusions:			
Foreign Military Sales	55.8	53.5	56.9
Base Realignment and Closure	(0.4)	-	-
Other Federal Department and Agencies	140.0	127.7	130.0
Non-Federal and Others	26.3	25.6	28.4
Institutional Major Range & Test Facility Base	-	-	-
OUSD(C) Approved Carryover Waiver	-	-	-
5. Orders for Carryover Calculation	2,185.1	2,384.2	2,397.5
6. Weighted Average Outlay Rate	54.8%	54.9%	55.1%
7. Carryover Rate	45.2%	45.1%	44.9%
8. Allowable Carryover	1,099.5	1,198.5	1,215.4
Allowable Carryover(First Year)	987.7	1,075.3	1,076.5
Allowable Carryover (Second Year Procurement-funded Orders)	111.8	123.3	138.9
Part II			
9. Balance of Customer Order at Year End	1,202.7	1,236.5	1,236.7
10. Work-in-progress	0.0	0.0	0.0
11. Exclusions:			
Foreign Military Sales	51.4	57.2	58.6
Base Realignment and Closure	0.5	0.5	0.5
Other Federal Department and Agencies	152.0	233.6	255.9
Non-Federal and Others	25.8	37.5	37.7
Institutional Major Range & Test Facility Base	0.0	0.0	0.0
OUSD(C) Approved Carryover Waiver	0.0	0.0	0.0
12. Calculated Actuals Carryover	973.0	907.7	884.0

Some totals may not add due to rounding.

7. Naval Research Laboratory

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NARRATIVE
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT – NAVAL RESEARCH LABORATORY
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Mission Statement / Overview:
The Naval Research Laboratory (NRL), the Navy's single, integrated corporate laboratory, provides the Navy with a broad foundation of in-house expertise from scientific through advanced development activity. Specific leadership responsibilities are assigned in the following areas: primary in-house research in the physical, engineering, space, and environmental sciences; broadly based exploratory and advanced development program in response to identified and anticipated Navy and Marine Corps needs; broad multidisciplinary support to the Naval Warfare Centers; and space systems technology development and support.

NRL operates as the Navy's full-spectrum corporate laboratory, conducting a broadly based multidisciplinary program of scientific research and advanced technological development directed toward maritime applications of new and improved materials, techniques, equipment, systems and ocean, atmospheric, and space sciences and related technologies. In fulfillment of this mission, NRL initiates and conducts broad scientific research of a basic and long-range nature in scientific areas of interest to the Navy; conducts exploratory and advanced technological development deriving from or appropriate to the scientific program areas; develops prototype systems applicable to specific projects; assumes responsibility as the Navy's principal R&D activity in areas of unique professional competence upon designation from appropriate Navy or Department of Defense (DoD) authority; performs scientific research and development for other Navy activities and, where specifically qualified, for other agencies of the DoD and, in defense-related efforts, for other Government agencies; serves as the lead Navy activity for space technology and space systems development and support; and serves as the lead Navy activity for mapping, charting, and geodesy marine chemistry & geochemistry research and development for the National Geospatial-Intelligence Agency.

Activity Group Composition:
In addition to the Washington, D.C. campus of about 131 acres and 89 main buildings, NRL maintains 14 other research sites. The many diverse scientific and technological research and support facilities include a large facility located at the Stennis Space Center in Bay St. Louis, Mississippi, a facility at the Naval Support Activity, Monterey Bay in Monterey, California, the Chesapeake Bay Detachment in Maryland, and additional sites located in Maryland, Virginia, and Florida.

SCIENTIFIC DEVELOPMENT SQUADRON ONE (VXS-1): This division is located aboard the Patuxent River Naval Air Station in Lexington Park, Maryland, operates and maintains two uniquely modified NP-3C Orion aircraft, one RC-12, the Navy's only airship, the MZ-3A, and numerous unmanned ScanEagle Unmanned Aerial Vehicles (UAVs) as airborne research platforms for worldwide scientific research operations.

NARRATIVE
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT – NAVAL RESEARCH LABORATORY
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
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CHESAPEAKE BAY DETACHMENT: The detachment occupies a 168-acre site near Chesapeake Beach, Maryland, and provides facilities and support services for research in radar, electronic warfare, optical devices, materials, communications, and fire rescue. Because of its location high above the Chesapeake Bay on the western shore, unique experiments can be performed in conjunction with the Tilghman Island site 16 km across the bay.

NRL STENNIS SPACE CENTER (NRL-SSC): NRL-SSC is a tenant activity at NASA's Stennis Space Center. Other Navy tenants at the Stennis Space Center include the Naval Meteorology and Oceanography Command and the Naval Oceanographic Office, who are major operational users of the oceanographic and atmospheric research and development performed by the NRL. This unique concentration of operational and research oceanographies makes NRL-SSC the center of naval oceanography and the largest such grouping in the western world.

MARINE METEOROLOGY DIVISION: Located in Monterey, California, this division is a tenant activity of the Naval Support Activity, Monterey Bay, is collocated with the Fleet Numerical Meteorology and Oceanography Center to support development of numerical atmospheric prediction systems and related user products. This collocation allows easy access to a large vector classified supercomputer mainframe, providing real time as well as archived global atmospheric and oceanographic databases for research at Monterey and at other NRL locations.

Significant Changes Since the FY 2019 President's Budget:
FY 2018 has been adjusted to reflect actual execution data including the impact of actual Civilian Personnel costs.

NARRATIVE
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT – NAVAL RESEARCH LABORATORY
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Financial Profile:

Orders/Revenue/Expense/Operating Results ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Orders	$1,000.2	$900.3	$939.6
Revenue	$946.0	$935.0	$996.2
Expense	$964.7	$958.5	$982.7
Operating Results	($18.7)	($23.5)	$13.5
Capital Surcharge and Other	($1.0)	$0.0	$0.0
Net Operating Results (NOR)	($19.7)	($23.5)	$13.5
Prior Year AOR	$29.7	$9.9	($13.5)
Other Changes Affecting AOR	$0.0	$0.0	$0.0
Accumulated Operating Results (AOR)	$9.9	($13.5)	$0.0

Some totals may not add due to rounding.

Revenue and Expense: Both revenue and expense are projected to increase compared to the FY 2019 President's Budget. The increase in revenue and expense is tied to the increase in direct labor hours being projected due to the growth in demand. The other portion of expense growth is attributed to increased restoration and modernization efforts supporting science and technology laboratories.

Collections/Disbursements/Outlays ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Collections	$951.2	$940.5	$995.0
Disbursements	$938.9	$940.5	$978.5
Net Outlays	($12.3)	$0.0	($16.5)

Some totals may not add due to rounding.

Fluctuations in net outlays reflect the timing of end-of-year billings and the impact of anticipated net operating results.

Workload:

Direct Labor Hours (000):	**FY 2018**	**FY 2019**	**FY 2020**
Current Estimate	3,084	3,108	3,120

The direct workforce (scientists and engineers) remain relatively steady in FY 2020. Growth in hours is due to one more workday in FY 2020.

NARRATIVE
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT – NAVAL RESEARCH LABORATORY
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Performance Indicators: The NRL outputs are scientific and engineering designs, developments, tests, evaluations, analyses and fleet support in NRL assigned mission areas. The measure for these outputs is the direct labor hour worked for a customer. Customers are charged a predetermined stabilized billing rate per direct employee hour worked (revenue rate). The rate includes the salary and benefits costs of the performing employee (direct labor costs) and a share of the overhead costs of NRL, both general and administrative support and the unique production overhead costs of the performing employee's cost center. Non-labor, non-overhead costs, such as customer required material and equipment purchases, travel expenses, and contractual services, are charged to the customer on an actual cost reimbursable basis, and are excluded from the NRL stabilized pricing structure. The NRL use total cost per direct labor hour as their performance criterion.

Unit Cost:	**FY 2018**	**FY 2019**	**FY 2020**
Total Stabilized Cost ($Millions)	$502.5	$506.9	$521.4
Workload (DLHs) (000)	3,084	3,108	3,120
Unit cost (per DLH)	$162.9	$163.1	$167.1

The Unit Cost is an expense rate method established to authorize and control costs. Unit cost goals allow activities to respond to workload changes in execution by encouraging reduced costs when workload declines and allowing appropriate increases in costs when customers request additional services. FY 2020 unit cost reflects stabilized costs per associated stabilized hours as an expense rate.

Stabilized / Composite Rates:	**FY 2018**	**FY 2019**	**FY 2020**
Stabilized Rate	$154.46	$151.04	$171.44
Change from Prior Year		-2.21%	13.50%
Composite Rate Change		0.06%	7.39%

The Stabilized Rate consists of direct labor and applied overhead. Unique direct non-labor costs are billed on a reimbursable basis to the customer. The composite rate change incorporates both the stabilized costs and the reimbursable costs. The composite rate change in FY 2020 reflects adjustments to direct workload, pricing changes, and increases in Naval Innovative Science and Engineering (NISE) funding to comply with 10 USC 2363.

NARRATIVE
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT – NAVAL RESEARCH LABORATORY
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Staffing:

Civilian/Military ES & Workyears:	**FY 2018**	**FY 2019**	**FY 2020**
Civilian End Strength	2,598	2,570	2,570
Civilian Workyears (straight time)	2,531	2,515	2,515
Military End Strength	70	60	61
Military Workyears	64	60	61

Civilian Personnel: Civilian strength levels, measured by both end strength and full-time equivalents (FTEs) have grown due to increased demand. The growth has been in the direct workforce.

Military Personnel: The Military resource estimates are a baseline projection of military personnel necessary to fulfill programming objectives and coordination with customers. Military resource estimates have been adjusted to reflect a minor increase in funded workload FY 2020.

Capital Investment Program (CIP) Authority ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Equipment, Non-ADP / Telecom	$10.0	$13.9	$17.1
Equipment, ADPE / Telecom	$1.6	$3.5	$0.6
Software Development	$0.0	$0.0	$0.0
Minor Construction	$15.1	$6.0	$8.0
Total	$26.7	$23.5	$25.7

Some totals may not add due to rounding.

Allows the NWCF to achieve its mission by reinvesting in plant equipment and facilities. Included in the capital budget are the following types of assets: Automated Data Processing Equipment (ADPE); non-ADPE equipment; automated data processing software, internally or externally developed; and minor construction. Minor construction includes projects meeting the criteria of the Defense Laboratory Revitalization Program (DLRP). The projects will replace aging buildings and upgrade and expand lab capability to accommodate workload growth and increase efficiency.

NARRATIVE
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT – NAVAL RESEARCH LABORATORY
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Carryover Compliance ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Net Carry-In	$470.6	$524.8	$490.1
Allowable Carryover	$467.1	$432.8	$448.8
Calculated Actual Carryover	$476.9	$405.0	$391.4
Delta (Actual-Allowable): Above Ceiling (+)/Below Ceiling (-)	$9.8	($27.8)	($57.4)

Some totals may not add due to rounding.

Carryover for each year is within the allowable carryover limit.

REVENUE AND EXPENSES
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL RESEARCH LABORATORY
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	FY 2018	FY 2019	FY 2020
Revenue:			
Gross Sales			
Operations	932.6	911.6	970.5
Capital Surcharges	0.0	0.0	0.0
Capital Investment Recovery	13.3	23.5	25.7
Other Income			
Total Income	946.0	935.0	996.2
Expenses			
Cost of Materiel Sold from Inventory			
Salaries and Wages:			
Military Personnel Compensation & Benefits	3.8	4.1	4.2
Civilian Personnel Compensation & Benefits	379.6	383.0	384.9
Travel and Transportation of Personnel	11.3	12.2	12.9
Material & Supplies (Internal Operations)	40.1	64.1	70.2
Equipment	53.1	42.0	42.8
Other Purchases from NWCF	7.2	17.9	18.2
Transportation of Things	0.8	1.8	1.8
Capital Investment Recovery	13.3	23.5	25.7
Printing and Reproduction	0.1	0.1	0.1
Advisory and Assistance Services	0.0	0.0	0.0
Rent, Communication, Utilities & Misc Charges	21.7	36.1	37.4
Other Purchased Services	432.9	373.9	384.5
Total Expenses	963.9	958.5	982.7
Work in Process Adjustment	0.8	0.0	0.0
Comp Work for Activity Retention Adjustment	0.0	0.0	0.0
Cost of Goods Sold	964.7	958.5	982.7
Operating Result	-18.7	-23.5	13.5
Adjustments Affecting NOR	-1.0	0.0	0.0
Capital Surcharges	0.0	0.0	0.0
Extraordinary Expenses Unmatched	-1.0	0.0	0.0
Other Changes Affecting NOR (All Others)	0.0	0.0	0.0
Net Operating Result	-19.7	-23.5	13.5
PY AOR	29.7	9.9	-13.5
TOTAL AOR	9.9	-13.5	0.0
Non-Recoverable Adjustments impacting AOR	0.0	0.0	0.0
AOR for budget purposes	9.9	-13.5	0.0

SOURCES OF NEW ORDERS & REVENUE
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL RESEARCH LABORATORY
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	FY 2018	FY 2019	FY 2020
1. New Orders	1,000.2	900.3	939.6
a. Orders from DoD Components:	933.5	840.3	877.0
Department of the Navy	585.9	526.6	549.6
O & M, Navy	39.7	35.8	37.3
O & M, Marine Corps	1.2	1.1	1.2
O & M, Navy Reserve	0.0	0.0	0.0
O & M, Marine Corp Reserve	0.0	0.0	0.0
Aircraft Procurement, Navy	3.6	3.2	3.4
Weapons Procurement, Navy	0.1	0.1	0.1
Ammunition Procurement, Navy/MC	0.0	0.0	0.0
Shipbuilding & Conversion, Navy	4.2	3.7	3.9
Other Procurement, Navy	13.6	12.3	12.8
Procurement, Marine Corps	0.1	0.1	0.1
Family Housing, Navy/MC	0.0	0.0	0.0
Research, Dev., Test, & Eval., Navy	523.3	470.2	490.8
Military Construction, Navy	0.0	0.0	0.0
National Defense Sealift Fund	0.0	0.0	0.0
Other Navy Appropriations	0.0	0.0	0.0
Other Marine Corps Appropriations	0.0	0.0	0.0
Department of the Army	11.0	9.9	10.3
Army Operation & Maintenance	2.7	2.5	2.6
Army Res, Dev, Test, Eval	7.7	7.0	7.3
Army Procurement	0.5	0.4	0.5
Army Other	0.0	0.0	0.0
Department of the Air Force	167.4	150.7	157.3
Air Force Operation & Maintenance	13.3	12.0	12.5
Air Force Res, Dev, Test, Eval	101.3	91.2	95.2
Air Force Procurement	52.8	47.5	49.6
Air Force Other	0.0	0.0	0.0
DOD Appropriation Accounts	169.2	153.2	159.9
Base Closure & Realignment	0.0	0.0	0.0
Operation & Maintenance Accounts	12.7	11.4	11.9
Res, Dev, Test & Eval Accounts	156.5	140.9	147.0
Procurement Accounts	1.0	0.0	0.0
Defense Emergency Relief Fund	0.0	0.0	0.0
DOD Other	1.0	0.9	1.0
b. Orders from other Fund Activity Groups	7.9	7.1	7.4
c. Total DoD	941.4	847.4	884.4
d. Other Orders:	58.8	52.9	55.2
Other Federal Agencies	52.7	47.5	49.5
Foreign Military Sales	0.3	0.3	0.3
Non Federal Agencies	5.7	5.1	5.4
2. Carry-In Orders	470.6	524.8	490.1
3. Total Gross Orders	1,470.8	1,425.2	1,429.8
a. Funded Carry-Over before Exclusions	524.8	490.1	433.5
4. Revenue(-)	946.0	935.0	996.2
5. End of Year Work-In-Process (-)	0.6	0.6	0.6
6. FMS, BRAC, Other Federal, Non-Federal orders, and Inst. MRTFB (-)	48.5	85.7	42.7
7. Funded Carryover	476.9	405.0	391.4

Note: Line 5 (End of Year Work-In-Process) is adjusted for Non-DOD BRAC, FMS, and Institutional MRTFB

CHANGES IN THE COSTS OF OPERATIONS
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL RESEARCH LABORATORY
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	Costs
FY 2018 Estimated Actuals	**964.7**
FY 2019 President's Budget:	**944.6**
Estimated Impact in FY 2019 of Actual FY 2018 Experience:	**0.0**
Pricing Adjustments:	**-1.8**
Civilian Personnel	-1.9
Fuel Price	0.2
Program Changes:	**6.4**
Science and Engineering Civilian Personnel Growth	**6.4**
Other Changes:	**9.2**
Capital Investment Recovery Decrease	-4.3
Section 212 Captial Investment Authority increase to $500K	7.0
Facilities Sustainment, Restoration & Modernization	5.5
General Purchase Inflation	1.0
FY 2019 Current Estimate:	**958.5**
Pricing Adjustments:	**17.5**
Annualization of Prior Year Pay Raises	**2.1**
Civilian Personnel	1.9
Military Personnel	0.2
FY 2020 Pay Raise	**0.0**
Civilian Personnel	0.0
Military Personnel	0.0
Fuel Price Changes	0.2
General Purchase Inflation	3.1
Other Price Changes (list)	**12.1**
Correction of FY 19 Composite Rate	5.8
Working Capital Fund Price Changes	6.3
Productivity Initiatives and Other Efficiencies:	**0.0**
Program Changes:	**0.0**
Other Changes:	**6.7**
Capital Investment Recovery	2.2
Facilities Sustainment, Restoration & Modernization	2.0
Change in work days	0.0
Civilian Equivalency Rate Changes	0.0
Section 219 increase to 2% Ceiling	2.5
FY 2020 Estimate:	**982.7**

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CAPITAL INVESTMENT SUMMARY
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL RESEARCH LABORATORY
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

		FY 2018		FY 2019		FY 2020	
Line #	Description	Quantity	Total Cost	Quantity	Total Cost	Quantity	Total Cost
1	**Non-ADPE and Telecom Equipment >= $.500M**	**13**	**$9.990**	**17**	**$13.915**	**20**	**$17.057**
	- Vehicles	0	$0.000	0	$0.000	0	$0.000
	- Material Handling	0	$0.000	0	$0.000	0	$0.000
	- Installation Security	0	$0.000	0	$0.000	0	$0.000
	- Quality Control/Testing	1	$0.505	0	$0.000	0	$0.000
	- Medical Equipment	0	$0.000	0	$0.000	0	$0.000
	- Machinery	0	$0.000	0	$0.000	0	$0.000
	- Support Equipment	12	$9.485	17	$13.915	20	$17.057
2	**ADPE and Telecom Equipment >= $.500M**	**2**	**$1.645**	**3**	**$3.537**	**1**	**$0.625**
	- Computer Hardware (Production)	2	$1.645	2	$1.664	1	$0.625
	- Computer Hardware (Network)	0	$0.000	0	$0.000	0	$0.000
	- Computer Software (Operating)	0	$0.000	0	$0.000	0	$0.000
	- Telecommunications	0	$0.000	0	$0.000	0	$0.000
	- Other Support Equipment	0	$0.000	1	$1.873	0	$0.000
3	**Software Development >= $.500M**	**0**	**$0.000**	**0**	**$0.000**	**0**	**$0.000**
	- Internally Developed	0	$0.000	0	$0.000	0	$0.000
	- Externally Developed	0	$0.000	0	$0.000	0	$0.000
4	**Minor Construction (>= $.500M and <= $2.000M)**	**6**	**$15.067**	**4**	**$6.000**	**2**	**$8.000**
	- Replacement Capability	0	$0.000	0	$0.000	0	$0.000
	- New Construction	6	$15.067	4	$6.000	2	$8.000
	- Environmental Capability	0	$0.000	0	$0.000	0	$0.000
	Grand Total	**21**	**$26.702**	**24**	**$23.452**	**23**	**$25.682**
	Total Capital Outlays		**$15.551**		**$23.452**		**$25.682**
	Total Capital Investment Recovery		**$13.343**		**$23.452**		**$25.682**

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Department of the Navy/ Research and Development	#001 - Non-ADPE						Naval Research Laboratory		
	FY 2018			FY 2019			FY 2020		
Non-ADP Equipment	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Vehicles	0	-	$0	0	-	$0	0	-	$0
Material Handling	0	-	$0	0	-	$0	0	-	$0
Installation Security	0	-	$0	0	-	$0	0	-	$0
Quality Control/ Testing	1	505	$505	0	-	$0	0	-	$0
Medical Equipment	0	-	$0	0	-	$0	0	-	$0
Machinery	0	-	$0	0	-	$0	0	-	$0
Support Equipment	12	790	$9,485	17	819	$13,915	20	853	$17,057
Total	13	768	$9,990	17	819	$13,915	20	853	$17,057

Justification:

Support Equipment

Capital investment in the support equipment capability will preserve, enhance and support requirements to maintain a technologically advanced, state-of-the-art laboratory and is tied directly to NRL's science and technology (S&T) mission. Investments cover a broadly based multi-disciplinary program of scientific research and advanced technological development directed toward maritime applications of new and improved materials, techniques, equipment, systems, and ocean, atmospheric and space sciences and related technologies.

NRL's largest investments in FY 2019 will be the "**Coherent Target Generator and RF Payload Test and Measurement System,**" both costing more than one million dollars each. The "**Coherent Target Generator**" investment will support and evaluate electronic warfare (EW) system and technique effectiveness for countering the anti-ship missile (ASM) threat to the Navy. The "**RF Payload Test and Measurement System**" investment will support advanced millimeter wave radar/EW prototypes of advanced millimeter wave radar, Electronic Protection (EP), and Electronic Attack (EA) techniques. This system's capability will include test and measurement for an airborne prototype supporting long range Millimeter-wave (MMW) combat identification that will support the Navy and the DoD.

NRL largest investments in FY 2020 are going to be "**Airborne Lidar Sensor**, **Portable Millimeter Wave Antenna Characterization and Analysis System**, **Anechoic Chamber Near Field and Far Field Automation**, **TWT and antenna upgrades for MRML**, and the **Software Radio Test System.**" All five projects cost more than a million dollars each.
The "**Airborne Lidar Sensor**" investment will support Applied Optics in addition to providing 3-D airborne imaging lidar, and in particular tactical mapping for seeing through fog and other degraded environments by examining the impact of humidity, haze and fog within these three wavebands.

The "**Portable Millimeter Wave Antenna Characterization and Analysis System**" investment will support the strategic vision of the U.S. Navy and Marine Corp that rely in large part on enhanced spectral dominance to provide warfighters a distinct advantage over adversaries. This system is a self-contained portable millimeter wave antenna measurement system that facilitates spherical near-field (SNF) and far-field measurement of millimeter-wave (mmW) antennas that will accelerate research in areas such as development of radar, electronic warfare (EW), electronic attack (EA), radar, and communications systems operating at millimeter-wave (mmW) frequencies (30 GHz to 300 GHz).

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The "**Anechoic Chamber Near Field and Far Field Automation**" investment will support the Navy's strategic vision for Electronic Warfare (EW), but will advance off-board decoy programs as well as other EW platforms. The measurements performed in the anechoic chamber are meant to produce accurate knowledge of radiated EW system radio frequency (RF) characteristics used to evaluate RF countermeasure effectiveness. Such information allows NRL to provide guidance to project sponsors and fleet offices on tactics and techniques available to our Naval warfighters. These system upgrades will double data collection speed over a broader frequency range which will enhance measurement throughput and reduce personnel hours.

The "**TWT and antenna upgrades for Mobile Research Measurement Laboratory (MRML)**" investment will increase the systems research capabilities in identifying emerging threat systems and support multiple other programs that require the need for this updated transmitter. This system has been used to characterize chaff, on-board and off-board decoys and naval vessels. Furthermore, the MRML system has and will continue to support a large number of sponsors with future naval capabilities (FNCs) programs.

The "**Software Radio Test System**" investment will support the Navy's desires for a radio system testing & evaluation asset for various radio products. This system will benefit the development of RF communications or collections development efforts by providing the test capability in the lab that would otherwise only be available through field testing. The system will allow for rapid testing and troubleshooting of waveform defects in a controlled manner, allowing the engineers the ability to more completely understand a system behavior and lead to a shorter time to complete defect resolution.

Pre-investment economic analyses were performed for all investments.

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Department of the Navy/ Research and Development	#002 - ADPE						Naval Research Laboratory		
	FY 2018			FY 2019			FY 2020		
ADP Equipment	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Computer Hardware (Production)	2	823	$1,645	2	832	$1,664	1	625	$625
Computer Hardware (Network)	0	-	$0	0	-	$0	0	-	$0
Computer Software (Operating System	0	-	$0	0	-	$0	0	-	$0
Telecommunications	0	-	$0	0	-	$0	0	-	$0
Other Support Equipment	0	-	$0	1	1,873	$1,873	0	-	$0
Total	2	823	$1,645	3	1,179	$3,537	1	625	$625

Justification:

Computer Hardware (Production)
Several investments in computer hardware (production) are proposed for FY 2019 and FY 2020. In FY 2019, some of the investments will benefit the following areas: accelerate the development of improved materials, capture global meteorological satellite data for near real-time processing and remotely-sensed product algorithm development, improve computing power and performance, and design more robust thermal control systems for future spacecraft.

In FY 2020, the investments will benefit the Navy's high demands for the rapid transition of scientific innovations from the laboratory to the warfighter. This virtual computing architecture environment will provide scalable data storage, and will provide flexibility in sizing the processing environments for the simulation and post-processing workload. The ability to create these custom environments and return them when done, meets the need for rapidly adaptable computing environment that meets the ever-changing Navy requirements.

Other Support Equipment
NRL's largest investment in FY 2019 is the "**Tactical Communications System.**" This investment will establish highly realistic, Naval tactical communications environments in a controlled laboratory environment, including the ability to create artificial Electro-Magnetic Interference (EMI) and degraded signal quality similar to real warfighter scenarios in relevant geographic locations.

Pre-investment economic analyses were performed for all investments.

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Department of the Navy/ Research and Development	#004 - Minor Construction						Naval Research Laboratory		
	FY 2018			FY 2019			FY 2020		
Minor Construction	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Replacement	0	-	$0	0	-	$0	0	-	$0
New Construction	6	2,511	$15,067	4	1,500	$6,000	2	4,000	$8,000
Environmental Capability	0	-	$0	0	-	$0	0	-	$0
Total	6	2,511	$15,067	4	1,500	$6,000	2	4,000	$8,000

Justification:

PROJECTS UNDER $1M

During FY 2019, the **"Perimeter Fence Expansion Adjacent to Bldg 222**" investment project will be extending the perimeter security fence to include the newly assigned adjacent to the parking area on the east side of Bldg 222 to include an additional approximation of 1.94 acres. This perimeter security fence will be permanent and will also prevent uncontrolled uses of the land by other organizations on Joint Base Anacostia-Boiling (such as the staging of items awaiting disposal). The area bounded by this fence is required to be secured.

PROJECTS OVER $1M

During FY 2019, the "**Construct Multi-Use Perimeter Pathway**" investment project will construct a multi-use pathway for pedestrian connectivity among its various facilities. A multi-use path enhances quality of life by encouraging foot travel between buildings as well as allowing a safe means of walking around the NRL campus. Additionally, the path provides accessibility for maintenance and inspection of utilities along the fence, such as steam and electrical lines, as well as security patrols.

The second project over $1M in FY 2019, the "**Install Two Backup Chillers at the Nanoscience Institute, Bldg 250**" investment is for the installation of the two 200-ton backup chillers, which will include interface piping with current chilled water plant piping, valves, and automatic switching. The Nanoscience Institute (NSI) requires a massive amount of cooling capacity, mostly in support of the clean room. Currently, the NSI relies on the chilled water plant with only a 200 ton backup chiller for emergencies. If the chilled water plant experiences an outage, work at the NSI becomes compromised as research platforms are shut down so that the backup chiller is not taxed beyond capacity. However, due to a recent failure in the chilled water lines, research was shut down for an extended period of time, negatively impacting mission requirements.

Last project for FY 2019 is the "**Upgrade Fire Protection – Blossom Point**" was originally budgeted for execution in FY 2017, but was approved to be reclassified/deferred into FY 2018. The original scope of work incorporated using the existing water tanks. NRL has recently determined that the existing water tanks need to be replaced and as result a substantial design and scope of work change are underway. New design modifications are required to meet the water storage requirement for this project, resulting in extensive delays and the project being deferred into FY 2019. This project will upgrade the fire protection systems to reduce the risk of losing important facilities, research, life and other damages. The facilities at Blossom Point are without adequate fire protection and a survey report dated 30 September 2012 cited several deficiencies. The investment includes four phases: 1) The installation of a fire alarm reporting system that will monitor Buildings 1, 3, 4, 11, 12 and 13. 2) Provide sprinkler systems to Buildings 1, 3, 4, 11 and 12. 3) Provide a new combination fire alarm/mass notification system for Building 11. 4) The underground water main feed from the Building 13 fire pump-house will be extended to the buildings listed in phase (2). The only alternative is status quo, which may result in injury, loss of life and/or complete or partial loss of adjacent facilities.

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During FY 2020, the "**Expand Chilled Water Capacity, Bldg A59**" investment project will provide additional, redundant cooling capacity to laboratories and clean rooms in Building A59 in the form of a water-cooled chiller with chilled water piping, ductwork, and appurtenances. This building "A59" is over 75 years old and requires modernization in order to meet its mission needs. One specific requirement is in the area of supplied cooled air (i.e. air conditioning), which is of the utmost importance regarding clean rooms. Without reliable conditioned air, all research, development, test and evaluation ceases. Furthermore, the Naval Center for Space Technology prepares payloads for space travel. In order to meet mission needs, all payloads must be fully tested within certain time frames in order reach their specific launch windows. Any delays in the development and test portions of payloads impact missions and tend to have a cascading effect where other payloads developed independently of NRL, as well as the rocket launches themselves, are also delayed.

Additionally, in FY 2020, the "**Additive Manufacturing Facility**" investment project will establish an additive manufacturing facility using CIP authority for the facility construction. Additive manufacturing technologies have numerous innovative applications for a number of important naval missions. Examples include the rapid generation of mechanical parts in the field for a reduced logistics tail, the fabrication of intricate 3D structures which have unsurpassed sound dampening properties for use in the underwater acoustic quieting of submarines, and the fabrication of 3D antenna structures for millimeter-wave (30 – 300 GHz) antennas needed for use in radar, Electronic Warfare (EW) and communication systems. This project will consist of renovate current space for the consolidation of all of the additive manufacturing equipment into a central location, thus facilitating easier operation, maintenance, and use by researchers.

Pre-investment economic analyses were performed for all investments.

CAPITAL BUDGET EXECUTION
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL RESEARCH LABORATORY
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

FY	Line Item	Category	Capability/Project	Initial Request	Current Proj Cost	Approved Change	Explanation
2018	**1**	**Non ADP**		**$15.168**	**$9.731**	**($5.437)**	
			Vehicles	$0.000	$0.000	$0.000	
			Material Handling	$0.000	$0.000	$0.000	
			Quality Control/Testing	$0.565	$0.565	$0.000	
			Machinery	$0.000	$0.000	$0.000	
			Support Equipment	$14.603	$9.166	($5.437)	Authority adjusted for FY18 actuals
	2	**ADP**		**$2.539**	**$1.720**	**($0.819)**	
			Computer Hardware (Production)	$2.145	$1.720	($0.425)	Authority adjusted for FY18 actuals
			Computer Hardware (Network)	$0.000	$0.000	$0.000	
			Computer Software (Operating)	$0.000	$0.000	$0.000	
			Telecommunications	$0.394	$0.000	($0.394)	Authority adjusted for FY18 actuals
			Other Support Equipment	$0.000	$0.000	$0.000	
	3	**Software**		**$0.000**	**$0.000**	**$0.000**	
			Internally Developed	$0.000	$0.000	$0.000	
			Externally Developed	$0.000	$0.000	$0.000	
	4	**Minor Construction**		**$16.787**	**$15.251**	**($1.536)**	
			Replacement	$0.000	$0.000	$0.000	
			New Construction	$16.787	$15.251	($1.536)	Authority adjusted for FY18 actuals
			Environmental Capability	$0.000	$0.000	$0.000	
TOTAL FY 2018 CIP Program				**$34.494**	**$26.702**	**($7.792)**	

FY	Line Item	Category	Capability/Project	Initial Request	Current Proj Cost	Approved Change	Explanation
2019	**1**	**Non ADP**		**$19.219**	**$13.915**	**($5.304)**	
			Vehicles	$0.000	$0.000	$0.000	
			Material Handling	$0.000	$0.000	$0.000	
			Quality Control/Testing	$0.507	$0.000	($0.507)	Authority adjusted as projects were reprioritized.
			Machinery	$0.369	$0.000	($0.369)	Authority adjusted as projects were reprioritized.
			Support Equipment	$18.343	$13.915	($4.428)	Authority adjusted as projects were reprioritized.
	2	**ADP**		**$2.509**	**$3.537**	**$1.028**	
			Computer Hardware (Production)	$1.854	$1.664	($0.190)	Authority adjusted as projects were reprioritized.
			Computer Hardware (Network)	$0.655	$0.000	($0.655)	Authority adjusted as projects were reprioritized.
			Computer Software (Operating)	$0.000	$0.000	$0.000	
			Telecommunications	$0.000	$0.000	$0.000	
			Other Support Equipment	$0.000	$1.873	$1.873	Authority adjusted as projects were reprioritized.
	3	**Software**		**$0.000**	**$0.000**	**$0.000**	
			Internally Developed	$0.000	$0.000	$0.000	
			Externally Developed	$0.000	$0.000	$0.000	
	4	**Minor Construction**		**$6.000**	**$6.000**	**$0.000**	
			Replacement	$0.000	$0.000	$0.000	
			New Construction	$6.000	$6.000	$0.000	
			Environmental Capability	$0.000	$0.000	$0.000	
TOTAL FY 2019 CIP Program				**$27.728**	**$23.452**	**($4.276)**	

FY	Line Item	Category	Capability/Project	Initial Request	Current Proj Cost	Approved Change	Explanation
2020	**1**	**Non ADP**		**$17.057**	**$17.057**	**$0.000**	
			Vehicles	$0.000	$0.000	$0.000	
			Material Handling	$0.000	$0.000	$0.000	
			Quality Control/Testing	$0.000	$0.000	$0.000	
			Machinery	$0.000	$0.000	$0.000	
			Support Equipment	$17.057	$17.057	$0.000	
	2	**ADP**		**$0.625**	**$0.625**	**$0.000**	
			Computer Hardware (Production)	$0.625	$0.625	$0.000	
			Computer Hardware (Network)	$0.000	$0.000	$0.000	
			Computer Software (Operating)	$0.000	$0.000	$0.000	
			Telecommunications	$0.000	$0.000	$0.000	
			Other Support Equipment	$0.000	$0.000	$0.000	
	3	**Software**		**$0.000**	**$0.000**	**$0.000**	
			Internally Developed	$0.000	$0.000	$0.000	
			Externally Developed	$0.000	$0.000	$0.000	
	4	**Minor Construction**		**$8.000**	**$8.000**	**$0.000**	
			Replacement	$0.000	$0.000	$0.000	
			New Construction	$8.000	$8.000	$0.000	
			Environmental Capability	$0.000	$0.000	$0.000	
TOTAL FY 2020 CIP Program				**$25.682**	**$25.682**	**$0.000**	

CARRYOVER RECONCILIATION
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL RESEARCH LABORATORY
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	FY 2018	FY 2019	FY 2020
Part 1			
1. Net Carry-In	470.6	524.8	490.1
2. Revenue	946.0	935.0	996.2
3. New Orders	1000.2	900.3	939.6
4. Exclusions:			
Foreign Military Sales	0.3	0.3	0.3
Base Realignment and Closure	0.0	0.0	0.0
Other Federal Department and Agencies	52.7	47.5	49.5
Non-Federal and Others	5.7	5.1	5.4
Institutional Major Range & Test Facility Base	0.0	0.0	0.0
OUSD(C) Approved Carryover Waiver	0.0	0.0	0.0
5. Orders for Carryover Calculation	941.4	847.4	884.4
6. Weighted Average Outlay Rate	51.6%	51.5%	51.5%
7. Carryover Rate	48.4%	48.5%	48.5%
8. Allowable Carryover	467.1	432.8	448.8
Allowable Carryover(First Year)	455.6	411.0	428.9
Allowable Carryover (Second Year Procurement-funded Orders)	11.5	21.8	19.8
Part II			
9. Balance of Customer Order at Year End	524.8	490.1	433.5
10. Work-in-progress	-0.6	-0.6	-0.6
11. Exclusions:			
Foreign Military Sales	0.7	0.3	0.2
Base Realignment and Closure	0.0	0.0	0.0
Other Federal Department and Agencies	43.5	82.1	39.9
Non-Federal and Others	4.4	3.3	2.6
Institutional Major Range & Test Facility Base	0.0	0.0	0.0
OUSD(C) Approved Carryover Waiver	0.0	0.0	0.0
12. Calculated Actuals Carryover	476.9	405.0	391.4

Some totals may not add due to rounding.

8. Expeditionary Warfare Center

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NARRATIVE
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT
NAVAL FACILITIES ENGINEERING AND EXPEDITIONARY WARFARE CENTER (EXWC)
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Mission Statement / Overview:
The mission of the Naval Facilities Engineering and Expeditionary Warfare Center (EXWC) is to operate the Navy's research, development, and test and evaluation for support combatant capabilities and sustainable facilities through specialized engineering, technology development, and lifecycle logistics services. The EXWC delivers quality products and services in:

- Energy and Utilities
- Amphibious and Expeditionary Systems
- Environmental
- Ocean Facilities
- Shore and Waterfront Facilities

As a member of the Naval Facilities Engineering Command (NAVFAC), EXWC provides worldwide support services to the Navy, Marine Corps and other Department of Defense (DoD) agencies. These support services provide solutions to problems through engineering; design; construction; consultation; test and evaluation; technology demonstration; implementation, and program management support. In accomplishing these services, EXWC leverages technology to enhance customer effectiveness and efficiency. The EXWC uses existing technology where possible, identifies and adapts breakthrough technology when appropriate, and performs technology development when required.

Activity Group Composition:
EXWC headquarters site is located at Port Hueneme, California with an east coast detachment at the Washington Navy Yard, Washington DC. The EXWC is the principal Navy provider of specialized engineering services and products for shore and offshore facilities, energy and utilities, environmental support, and amphibious and expeditionary systems. The work performed is accomplished by mobilizing the proper mix of personnel expertise and other technological resources to address customer requirements. The center provides a synergism of expertise and practical experience to solve field activity and fleet needs.

Significant Changes Since the FY 2019 President's Budget:
The most significant change since the FY 2019 President's Budget is EXWC's designation as a Science and Technology Reinvention Laboratory (STRL) in the FY 2018 National Defense Authorization Act (NDAA). This change realigns EXWC from the Base Support business area to the Research and Development business area. The STRL designation also enables EXWC to participate in the Naval Innovative Science and Engineering (NISE) Program. Consistent with 10 USC 2363, NISE efforts will focus on in-house basic research, applied research, technology transition, and advanced and technical training for the EXWC workforce. Through these efforts,

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MARCH 2019

EXWC will be able to support technological change using accelerated acquisition and rapid prototyping that provides rapid results to the warfighter. Lastly, EXWC's budget reflects increased customer demand for cable facilities support and specialized fleet mooring work.

Financial Profile:

Revenue/Expense/Operating Result ($Millions):	**FY 2018**	**FY2019**	**FY2020**
Orders	$92.0	$76.7	$87.6
Revenue	$87.7	$77.3	$86.9
Expense	$86.5	$81.9	$83.5
Operating Results	$1.2	($4.6)	$3.4
Other Changes Affecting NOR	$0.0	$0.0	$0.0
Net Operating Results (NOR)	$1.2	($4.6)	$3.4
Other Changes Affecting AOR	$0.0	$0.0	$0.0
Accumulated Operating Results (AOR)	$1.2	($3.4)	$0.0

Some totals may not add due to rounding.

Orders, Revenue and Expense: The changes in orders from FY 2019 to FY 2020 primarily reflect new workload is in the areas of Ocean Facilities engineering. The change in revenue and expense between FY 2019 and FY 2020 are a result of the participation in the NISE program, economic assumptions for inflation/pricing, and research and development contract requirements in direct support of customer workload.

Collections/Disbursements/Outlays ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Collections	$87.5	$85.4	$90.7
Disbursements	$86.3	$90.2	$88.9
Outlays	($1.3)	$4.8	($1.8)

Some totals may not add due to rounding.

Collections and disbursements reflect expected revenue and expenses based on anticipated changes in accounts receivable and accounts payable/accrued labor expenses. Net Outlays are projected to remain relatively stable from FY 2019 to FY 2020.

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NAVAL FACILITIES ENGINEERING AND EXPEDITIONARY WARFARE CENTER (EXWC)
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Workload:

Direct Labor Hours (000):	**FY 2018**	**FY 2019**	**FY 2020**
Current Estimate	545	536	539

Direct labor hours reflect demand for the EXWC specialized, engineering services. Each year, customer demand and required services are estimated and reviewed to ensure the command is correctly resourcing and leveraging engineering expertise needed to provide the right mix of engineering services and to maintain the correct level of organic capability to meet recurring customer demand.

Performance Indicators: The EXWC outputs are scientific and engineering designs, developments, tests, evaluations, analyses and fleet support in EXWC assigned mission areas. The measure for these outputs is the direct labor hour worked for a customer. Customers are charged a predetermined stabilized billing rate per direct employee hour worked (revenue rate). The rate includes the salary and benefits costs of the performing employee (direct labor costs) and a share of the overhead costs of the EXWC, both general and administrative support and the unique production overhead costs of the performing employee. Non-labor, non-overhead costs, such as customer required material and equipment purchases, travel expenses, and contractual services, are charged to the customer on an actual cost reimbursable basis, and are excluded from the EXWC stabilized pricing structure. The primary performance indicator is unit cost, which represents the average cost of delivering goods and services to our customers.

Unit Cost:	**FY 2018**	**FY 2019**	**FY 2020**
Total Stabilized Cost ($Millions)	$65.8	$62.5	$61.8
Workload (DLHs) (000)	545	536	539
Unit cost (per DLH)	$120.8	$116.5	$114.6

Unit cost is the method established to authorize and control costs (expenses rate). Unit cost goals allow activities to respond to workload changes in execution by encouraging reduced costs when workload declines and allowing appropriate increases in costs when customers request additional services.

NARRATIVE
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RESEARCH AND DEVELOPMENT
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MARCH 2019

Stabilized / Composite Rates:	**FY 2018**	**FY 2019**	**FY 2020**
Stabilized Rate	$121.61	$107.18	$124.95
Change from Prior Year		-11.86%	16.58%
Composite Rate Change		-7.42%	12.32%

The stabilized rate consists of direct labor and applied overhead. Unique direct non-labor costs are billed on a reimbursable basis to the customer (revenue rate). The composite rate change incorporates both the stabilized costs and the reimbursable costs. The composite rate change in FY 2020 reflects adjustments to direct workload, pricing changes, and the NISE funding to comply with 10 USC 2363.

Staffing:

Civilian/Military ES & Workyears:	**FY 2018**	**FY 2019**	**FY 2020**
Civilian End Strength	422	408	408
Civilian Workyears (straight time)	409	405	405
Military End Strength	3	3	3
Military Workyears	3	3	3

Civilian Personnel: The EXWC management team maintains an optimal mix and quantity of personnel required to ensure effectiveness in providing quality products and services to our customers. Ultimately, EXWC continues to size the civilian workforce in response to mission and/or regulatory requirements.

Military Personnel: Military end strength and workyears remain unchanged.

Capital Investment Program (CIP) Authority ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Equipment, Non-ADP / Telecom	$0.0	$1.4	$0.0
Equipment, ADPE / Telecom	$0.0	$0.0	$0.0
Software Development	$0.0	$0.0	$0.0
Minor Construction	$0.0	$0.0	$0.0
Total	$0.0	$1.4	$0.0

The EXWC is not requesting CIP authority in FY 2020.

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MARCH 2019

Carryover Compliance ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Net Carry-In	$29.0	$33.3	$32.7
Allowable Carryover	$36.3	$32.1	$33.2
Calculated Actual Carryover	$30.3	$29.8	$30.6
Delta (Actual-Allowable): Above Ceiling (+)/Below Ceiling (-)	($6.0)	($2.3)	($2.6)

Some totals may not add due to rounding.

Carryover for each year is within the allowable carryover limit.

REVENUE AND EXPENSES
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL FACILITIES ENGINEERING AND EXPEDITIONARY WARFARE CENTER (EXWC)
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	FY 2018	FY 2019	FY 2020
Revenue:			
Gross Sales			
Operations	87.6	77.3	86.9
Capital Surcharges	0.0	0.0	0.0
Capital Investment Recovery	0.0	0.0	0.0
Other Income			
Total Income	87.7	77.3	86.9
Expenses			
Cost of Materiel Sold from Inventory			
Salaries and Wages:			
Military Personnel Compensation & Benefits	0.4	0.4	0.4
Civilian Personnel Compensation & Benefits	59.3	59.3	59.6
Travel and Transportation of Personnel	4.4	4.8	4.8
Material & Supplies (Internal Operations)	1.8	2.1	2.1
Equipment	7.2	1.0	1.0
Other Purchases from NWCF	0.3	2.1	1.4
Transportation of Things	0.3	0.3	0.3
Capital Investment Recovery	0.0	0.0	0.0
Printing and Reproduction	0.0	0.0	0.0
Advisory and Assistance Services	0.0	0.0	0.0
Rent, Communication, Utilities & Misc Charges	0.6	0.6	0.6
Other Purchased Services	12.1	11.2	13.1
Total Expenses	86.5	81.9	83.5
Work in Process Adjustment	0.0	0.0	0.0
Comp Work for Activity Retention Adjustment	0.0	0.0	0.0
Cost of Goods Sold	86.5	81.9	83.5
Operating Result	1.2	-4.6	3.4
Adjustments Affecting NOR	0.0	0.0	0.0
Capital Surcharges	0.0	0.0	0.0
Extraordinary Expenses Unmatched	0.0	0.0	0.0
Other Changes Affecting NOR (All Others)	0.0	0.0	0.0
Net Operating Result	1.2	-4.6	3.4
PY AOR	0.0	1.2	-3.4
TOTAL AOR	1.2	-3.4	0.0
Non-Recoverable Adjustments impacting AOR	0.0	0.0	0.0
AOR for budget purposes	1.2	-3.4	0.0

SOURCES OF NEW ORDERS & REVENUE
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL FACILITIES ENGINEERING AND EXPEDITIONARY WARFARE CENTER (EXWC)
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	FY 2018	FY 2019	FY 2020
1. New Orders	92.0	76.7	87.6
a. Orders from DoD Components:	85.8	68.2	75.7
Department of the Navy	75.4	60.7	65.0
O & M, Navy	47.7	32.9	39.2
O & M, Marine Corps	2.4	0.9	1.2
O & M, Navy Reserve	0.6	0.3	0.0
O & M, Marine Corp Reserve	0.0	0.0	0.0
Aircraft Procurement, Navy	0.0	0.0	0.0
Weapons Procurement, Navy	0.0	0.0	0.0
Ammunition Procurement, Navy/MC	0.0	0.0	0.0
Shipbuilding & Conversion, Navy	0.4	0.0	0.0
Other Procurement, Navy	4.1	3.8	3.8
Procurement, Marine Corps	0.4	0.0	0.1
Family Housing, Navy/MC	0.0	0.0	0.0
Research, Dev., Test, & Eval., Navy	16.3	17.3	19.9
Military Construction, Navy	3.5	5.1	0.8
National Defense Sealift Fund	0.0	0.0	0.0
Other Navy Appropriations	0.0	0.0	0.0
Other Marine Corps Appropriations	0.0	0.4	0.0
Department of the Army	2.5	2.6	4.3
Army Operation & Maintenance	1.7	1.5	2.2
Army Res, Dev, Test, Eval	0.8	1.1	2.1
Army Procurement	0.0	0.0	0.0
Army Other	0.1	0.0	0.0
Department of the Air Force	2.4	1.6	1.5
Air Force Operation & Maintenance	0.3	1.0	0.0
Air Force Res, Dev, Test, Eval	1.8	0.6	1.5
Air Force Procurement	0.0	0.0	0.0
Air Force Other	0.3	0.0	0.1
DOD Appropriation Accounts	5.5	3.4	4.8
Base Closure & Realignment	1.1	1.0	0.9
Operation & Maintenance Accounts	0.4	0.6	1.1
Res, Dev, Test & Eval Accounts	3.8	1.8	2.1
Procurement Accounts	0.0	0.0	0.2
Defense Emergency Relief Fund	0.0	0.0	0.0
DOD Other	0.2	0.0	0.5
b. Orders from other Fund Activity Groups	4.7	6.8	9.9
c. Total DoD	90.5	75.1	85.6
d. Other Orders:	1.5	1.7	2.0
Other Federal Agencies	1.3	1.5	1.5
Foreign Military Sales	0.1	0.0	0.3
Non Federal Agencies	0.1	0.2	0.3
2. Carry-In Orders	29.0	33.3	32.7
3. Total Gross Orders	121.0	110.0	120.3
a. Funded Carry-Over before Exclusions	33.3	32.7	33.3
4. Revenue(-)	87.7	77.3	86.9
5. End of Year Work-In-Process (-)	0.0	0.0	0.0
6. FMS, BRAC, Other Federal, Non-Federal orders, and Inst. MRTFB (-)	3.0	2.9	2.7
7. Funded Carryover	30.3	29.8	30.6

Note: Line 5 (End of Year Work-In-Process) is adjusted for Non-DOD BRAC, FMS, and Institutional MRTFB

CHANGES IN THE COSTS OF OPERATIONS
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL FACILITIES ENGINEERING AND EXPEDITIONARY WARFARE CENTER (EXWC)
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	Costs
FY 2018 Actuals	**86.5**
FY 2019 President's Budget:	**79.9**
Estimated Impact in FY 2019 of Actual FY 2018 Experience:	**0.0**
Pricing Adjustments:	**0.1**
Civilian Personnel	0.0
Fuel Price	0.1
Program Changes:	**1.9**
Naval Innovative Science and Engineering (NISE) Program	1.9
Other Changes:	**0.0**
Decrease in Federal Employees' Compensation Act (FECA) charges	-0.4
Changes in the Ocean Facilites product line, fleet mooring and other costs	0.4
FY 2019 Current Estimate:	**81.9**
FY 2019 Current Estimate:	**81.9**
Pricing Adjustments:	**0.4**
Annualization of Prior Year Pay Raises	**0.0**
Civilian Personnel	0.0
Military Personnel	0.0
FY 2020 Pay Raise	**0.0**
Civilian Personnel	0.0
Military Personnel	0.0
Fuel Price Changes	0.0
General Purchase Inflation	0.4
Other Price Changes	**0.0**
Working Capital Fund Price Changes	0.0
Productivity Initiatives and Other Efficiencies:	**0.0**
Program Changes:	**1.0**
Naval Innovative Science and Engineering (NISE) Program	1.0
Other Changes:	**0.2**
Change in work days due to one more paid day	0.2
FY 2020 Estimate:	**83.5**

CAPITAL INVESTMENT SUMMARY
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL FACILITIES ENGINEERING AND EXPEDITIONARY WARFARE CENTER (EXWC)
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

		FY 2018		FY 2019		FY 2020	
Line #	Description	Quantity	Total Cost	Quantity	Total Cost	Quantity	Total Cost
1	**Non-ADPE and Telecom Equipment >= $.500M**	**0**	**$0.000**	**1**	**$1.400**	**0**	**$0.000**
	- Vehicles	0	$0.000	0	$0.000	0	$0.000
	- Material Handling	0	$0.000	0	$0.000	0	$0.000
	- Installation Security	0	$0.000	0	$0.000	0	$0.000
	- Quality Control/Testing	0	$0.000	1	$1.400	0	$0.000
	- Medical Equipment	0	$0.000	0	$0.000	0	$0.000
	- Machinery	0	$0.000	0	$0.000	0	$0.000
	- Support Equipment	0	$0.000	0	$0.000	0	$0.000
2	**ADPE and Telecom Equipment >= $.500M**	**0**	**$0.000**	**0**	**$0.000**	**0**	**$0.000**
	- Computer Hardware (Production)	0	$0.000	0	$0.000	0	$0.000
	- Computer Hardware (Network)	0	$0.000	0	$0.000	0	$0.000
	- Computer Software (Operating)	0	$0.000	0	$0.000	0	$0.000
	- Telecommunications	0	$0.000	0	$0.000	0	$0.000
	- Other Support Equipment	0	$0.000	0	$0.000	0	$0.000
3	**Software Development >= $.500M**	**0**	**$0.000**	**0**	**$0.000**	**0**	**$0.000**
	- Internally Developed	0	$0.000	0	$0.000	0	$0.000
	- Externally Developed	0	$0.000	0	$0.000	0	$0.000
4	**Minor Construction (>= $.500M and <= $2.000M)**	**0**	**$0.000**	**0**	**$0.000**	**0**	**$0.000**
	- Replacement Capability	0	$0.000	0	$0.000	0	$0.000
	- New Construction	0	$0.000	0	$0.000	0	$0.000
	- Environmental Capability	0	$0.000	0	$0.000	0	$0.000
	Grand Total	**0**	**$0.000**	**1**	**$1.400**	**0**	**$0.000**
	Total Capital Outlays		**$0.000**		**$1.400**		**$0.000**
	Total Capital Investment Recovery		**$0.000**		**$0.038**		**$0.000**

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Department of the Navy/ Research and Development	#001 - Non-ADPE						Naval Facilities Engineering and Expeditionary Warfare Center		
	FY 2018			FY 2019			FY 2020		
Non-ADP Equipment	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Vehicles	0	-	$0	0	-	$0	0	-	$0
Material Handling	0	-	$0	0	-	$0	0	-	$0
Installation Security	0	-	$0	0	-	$0	0	-	$0
Quality Control/ Testing	0	-	$0	1	1,400	$1,400	0	-	$0
Medical Equipment	0	-	$0	0	-	$0	0	-	$0
Machinery	0	-	$0	0	-	$0	0	-	$0
Support Equipment	0	-	$0	0	-	$0	0	-	$0
Total	0	-	$0	1	1,400	$1,400	0	-	$0

Justification:

No Approved CIP Projects for EXWC in FY 2020

CAPITAL BUDGET EXECUTION
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL FACILITIES ENGINEERING AND EXPEDITIONARY WARFARE CENTER (EXWC)
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

FY	Line Item	Category	Capability/Project	Initial Request	Current Proj Cost	Approved Change	Explanation
2018	**1**	**Non ADP**		**$0.000**	**$0.000**	**$0.000**	
			Vehicles	$0.000	$0.000	$0.000	
			Material Handling	$0.000	$0.000	$0.000	
			Quality Control/Testing	$0.000	$0.000	$0.000	
			Machinery	$0.000	$0.000	$0.000	
			Support Equipment	$0.000	$0.000	$0.000	
	2	**ADP**		**$0.000**	**$0.000**	**$0.000**	
			Computer Hardware (Production)	$0.000	$0.000	$0.000	
			Computer Hardware (Network)	$0.000	$0.000	$0.000	
			Computer Software (Operating)	$0.000	$0.000	$0.000	
			Telecommunications	$0.000	$0.000	$0.000	
			Other Support Equipment	$0.000	$0.000	$0.000	
	3	**Software**		**$0.000**	**$0.000**	**$0.000**	
			Internally Developed	$0.000	$0.000	$0.000	
			Externally Developed	$0.000	$0.000	$0.000	
	4	**Minor Construction**		**$0.000**	**$0.000**	**$0.000**	
			Replacement	$0.000	$0.000	$0.000	
			New Construction	$0.000	$0.000	$0.000	
			Environmental Capability	$0.000	$0.000	$0.000	
TOTAL FY 2018 CIP Program				**$0.000**	**$0.000**	**$0.000**	

FY	L.I.	Category	Capability/Project	I.R	C.P.R	A.C.	Explanation
2019	**1**	**Non ADP**		**$1.400**	**$1.400**	**$0.000**	
			Vehicles	$0.000	$0.000	$0.000	
			Material Handling	$0.000	$0.000	$0.000	
			Quality Control/Testing	$1.400	$1.400	$0.000	
			Machinery	$0.000	$0.000	$0.000	
			Support Equipment	$0.000	$0.000	$0.000	
	2	**ADP**		**$0.000**	**$0.000**	**$0.000**	
			Computer Hardware (Production)	$0.000	$0.000	$0.000	
			Computer Hardware (Network)	$0.000	$0.000	$0.000	
			Computer Software (Operating)	$0.000	$0.000	$0.000	
			Telecommunications	$0.000	$0.000	$0.000	
			Other Support Equipment	$0.000	$0.000	$0.000	
	3	**Software**		**$0.000**	**$0.000**	**$0.000**	
			Internally Developed	$0.000	$0.000	$0.000	
			Externally Developed	$0.000	$0.000	$0.000	
	4	**Minor Construction**		**$0.000**	**$0.000**	**$0.000**	
			Replacement	$0.000	$0.000	$0.000	
			New Construction	$0.000	$0.000	$0.000	
			Environmental Capability	$0.000	$0.000	$0.000	
TOTAL FY 2019 CIP Program				**$1.400**	**$1.400**	**$0.000**	

FY	L.I.	Category	Capability/Project	I.R	C.P.R	A.C.	Explanation
2020	**1**	**Non ADP**		**$0.000**	**$0.000**	**$0.000**	
			Vehicles	$0.000	$0.000	$0.000	
			Material Handling	$0.000	$0.000	$0.000	
			Quality Control/Testing	$0.000	$0.000	$0.000	
			Machinery	$0.000	$0.000	$0.000	
			Support Equipment	$0.000	$0.000	$0.000	
	2	**ADP**		**$0.000**	**$0.000**	**$0.000**	
			Computer Hardware (Production)	$0.000	$0.000	$0.000	
			Computer Hardware (Network)	$0.000	$0.000	$0.000	
			Computer Software (Operating)	$0.000	$0.000	$0.000	
			Telecommunications	$0.000	$0.000	$0.000	
			Other Support Equipment	$0.000	$0.000	$0.000	
	3	**Software**		**$0.000**	**$0.000**	**$0.000**	
			Internally Developed	$0.000	$0.000	$0.000	
			Externally Developed	$0.000	$0.000	$0.000	
	4	**Minor Construction**		**$0.000**	**$0.000**	**$0.000**	
			Replacement	$0.000	$0.000	$0.000	
			New Construction	$0.000	$0.000	$0.000	
			Environmental Capability	$0.000	$0.000	$0.000	
TOTAL FY 2020 CIP Program				**$0.000**	**$0.000**	**$0.000**	

CARRYOVER RECONCILIATION
DEPARTMENT OF THE NAVY
RESEARCH AND DEVELOPMENT - NAVAL FACILITIES ENGINEERING AND
EXPEDITIONARY WARFARE CENTER (EXWC)
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
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	FY 2018	FY 2019	FY 2020
Part 1			
1. Net Carry-In	29.0	33.3	32.7
2. Revenue	87.7	77.3	86.9
3. New Orders	92.0	76.7	87.6
4. Exclusions:			
Foreign Military Sales	0.1	0.0	0.3
Base Realignment and Closure	1.1	1.0	0.9
Other Federal Department and Agencies	1.3	1.5	1.5
Non-Federal and Others	0.1	0.2	0.3
Institutional Major Range & Test Facility Base	0.0	0.0	0.0
OUSD(C) Approved Carryover Waiver	0.0	0.0	0.0
5. Orders for Carryover Calculation	89.4	74.1	84.7
6. Weighted Average Outlay Rate	60.3%	57.9%	61.6%
7. Carryover Rate	39.7%	42.1%	38.4%
8. Allowable Carryover	36.3	32.1	33.2
Allowable Carryover(First Year)	35.5	31.2	32.5
Allowable Carryover (Second Year Procurement-funded Orders)	0.8	0.9	0.7
Part II			
9. Balance of Customer Order at Year End	33.3	32.7	33.3
10. Work-in-progress	0.0	0.0	0.0
11. Exclusions:			
Foreign Military Sales	0.0	0.0	0.0
Base Realignment and Closure	1.8	1.8	1.8
Other Federal Department and Agencies	0.9	1.0	0.9
Non-Federal and Others	0.3	0.1	0.0
Institutional Major Range & Test Facility Base	0.0	0.0	0.0
OUSD(C) Approved Carryover Waiver	0.0	0.0	0.0
12. Calculated Actuals Carryover	30.3	29.8	30.6

Some totals may not add due to rounding.

9. Military Sealift Command

Back of Tab

NARRATIVE
DEPARTMENT OF THE NAVY
TRANSPORTATION – MILITARY SEALIFT COMMAND
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Mission Statement / Overview:
The Military Sealift Command (MSC) is the single manager-operating agency for sealift services. Over ocean movement of supplies and provisions to the deployed operating forces is a primary focus of MSC; it also maintains prepositioned equipment and supplies as well as other special mission services. These combine to support the Department of the Navy (DON) in deterring potential threats and promptly responding to crisis in the maritime crossroads. This submission addresses MSC's Navy mission operating within the Navy Working Capital Fund (NWCF), providing support to the Fleet Commanders (FLTCOMs) and other Department of Defense (DoD) activities by providing unique vessels and programs. Ship availability for MSC customers is the metric for evaluating mission performance in the sealift transportation business area.

Activity Group Composition:
The MSC supports United States Pacific Fleet (USPACFLT) and U.S. Fleet Forces Command (USFFC), the Naval Sea Systems Command (NAVSEA), the Space and Naval Warfare Systems Command (SPAWAR), the Strategic Systems Programs (SSP), the Missile Defense Agency (MDA) and the U.S. Air Force with unique vessels and programs

The four programs budgeted through the NWCF are:

1. Combat Logistics Force (CLF): Provides support utilizing civilian mariner manned non-combatant ships for material support including underway replenishment, commercial helicopter services and other direct fleet support to Navy ships worldwide.

2. Special Mission Ships (SMS): Provides unique seagoing platforms which support specialized scientific and technical missions for DoD sponsors. Missions include ocean surveillance, oceanographic survey, cable laying, missile telemetry collection, submarine support and navigation test support.

3. Afloat Prepositioning Force-Navy (APF-N): Deploys advance material for strategic lifts and at-sea staging around the world for the U.S. Navy and Marine Expeditionary Forces. This program also contains the Expeditionary Transfer Dock (ESD) and Expeditionary Sea Base (ESB) ship classes which are highly flexible platforms utilized across a broad range of military operations supporting the deployment and sustainment of forces and prepositioned supplies and equipment.

4. Service Support Ships (SSS): Provides the Navy with towing, rescue and salvage, submarine support, floating medical facilities, as well as the Navy's 6th Fleet Flagship. Also included are Expeditionary Fast Transports (EPF) which provide rapid, intra-theater transport of conventional or special forces and military equipment and supplies.

NARRATIVE
DEPARTMENT OF THE NAVY
TRANSPORTATION – MILITARY SEALIFT COMMAND
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Support ships include Fleet Ocean Tugs, Rescue and Salvage Ships, Hospital Ships, Submarine Tenders, Command Ship, and beginning in FY19, this program also contains the High Speed Transport Vessels, realigned from APF-N program, the contracted Harbor Tugs and Tows, and the Motor Vessels (MVs) realigned from SMS program.

Significant Changes Since the FY 2019 President's Budget:

FY 2018 to FY 2019:

CLF – USNS LEWIS AND CLARK (T-AKE 1) and USNS SACAGAWEA (T-AKE 2) realigned to CLF from APF-N program.

SMS – USNS ZEUS (T-ARC 7) realigned to SMS from SSS program. Harbor Tugs, Socal Tow, and MVs have been realigned to SSS program.

APF-N – USNS LEWIS B. PULLER (T-ESB-3), USNS HERSHEL WILLIAMS (T-ESB-4) and ESB-5 realigned to APF-N from SSS program. USNS LEWIS AND CLARK (T-AKE 1) and USNS SACAGAWEA (T-AKE 2) moved to CLF. USNS HERSHEL WILLIAMS (T-ESB-4) will operate a full year in FY 2019 as per diem while USNS MIGUEL KEITH (T-ESB-5) will be operational in the last quarter of FY 2019 as per diem. Pre-delivery costs will be recognized for USNS MIGUEL KEITH (T-ESB-5).

SSS - Harbor Tugs, Socal Tow, and MVs realigned to SSS from SMS program. The USNS PUERTO RICO (T-EPF 11) will operate over half the year as per diem.

FY 2019 to FY 2020:

CLF – Pre-delivery costs identified for T-AOX 1 and T-AOX 2.

SMS – No major changes.

APF-N – No major changes.

SSS – USNS PUERTO RICO (T-EPF 11) will be fully operational and USNS NEWPORT (T-EPF 12) will be operational for 317 days. Ship charter costs for Harbor Tugs increased due to two additional tugs (Guam and Norfolk) and higher charter rates. Increase for USNS MERCY (T-AH 19) and USNS COMFORT (T-AH 19) due to service life extension. Increase in fuel costs and additional civilian mariners in support of new ships coming online. Increase for maintenance backlog for USS FRANK CABLE (AS 40) and USS EMORY LAND (AS 39) ships.

NARRATIVE
DEPARTMENT OF THE NAVY
TRANSPORTATION – MILITARY SEALIFT COMMAND
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Financial Profile:

Orders/Revenue/Expense/Operating Results ($Millions):	FY 2018	FY 2019	FY 2020
Revenue	$2,727.2	$2,866.8	$3,570.5
Expense	$3,045.3	$2,934.8	$3,314.3
Operating Results	($318.1)	($68.0)	$256.3
Capital Surcharge	$0.0	$0.0	$0.0
Net Operating Results (NOR)	($318.1)	($68.0)	$256.3
Non Recoverable Adjustments Impacting AOR	$0.0	$0.0	($50.0)
Prior Year Accumlated Operating Results	$0.0	($138.3)	($206.3)
Accumulated Operating Results (AOR)	($138.3)	($206.3)	$0.0

Some totals may not add due to rounding.

Orders, Revenue and Expense: The variations in revenue and expense from year to year are associated with the changes in ship fleet within the following classes as discussed in the significant changes section above; T-AOX, T-AO, T-AOE, T-AKE, T-AGS, T-AGOS, T-AH, T-ATF, T-ARS, ESB (MLP), and EPF. FY 2020 reflects adjustments to AOR to maintain operating cash associated with budgetary resources required for projected outlays.

Net Operating Result (NOR): The FY 2019 current estimate of $68.0M negative NOR is a result of fuel price increases and inflation adjustments across the ship classes. These changes have been incorporated and are anticipated to be recovered in FY 2020.

Collections/Disbursements/Outlays ($Millions):	FY 2018	FY 2019	FY 2020
Collections	$2,740.2	$2,866.8	$3,570.5
Disbursements	$3,011.0	$2,934.9	$3,314.0
Outlays	$270.8	$68.1	($256.5)

Some totals may not add due to rounding.

Collections: FY 2018 actuals, FY 2019 and FY 2020 reflect expected revenue based on current estimates adjusted for changes in accounts receivable.

Disbursements: FY 2018 actuals, FY 2019 and FY 2020 represent budgeted expenses and Capital Investment Program (CIP) outlays adjusted for changes in accounts payable.

NARRATIVE
DEPARTMENT OF THE NAVY
TRANSPORTATION – MILITARY SEALIFT COMMAND
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Workload:	**FY 2018**	**FY 2019**	**FY 2020**
CLF	10,585	11,315	11,346
SMS	8,395	7,300	7,320
APF-N	5,840	6,027	6,222
SSS	7,754	8,957	9,467

Workload for MSC refers to the number of per diem days associated with each of the four MSC programs. In FY2019: USNS LEWIS AND CLARK (T-AKE 1) and USNS SACAGAWEA (T-AKE 2) were moved from APF-N to CLF, the MV class ships were moved from SMS to SSS, the ESBs including the new ESB-5 were moved from SSS to APF-N and the USNS ZEUS (T-ARC 7) was moved from SSS to SMS.

CLF – The increase in FY 2019 is due to the move of USNS LEWIS AND CLARK (T-AKE 1) and USNS SACAGAWEA (T-AKE 2) from APF-N to CLF.

SMS – The decrease in FY 2019 is due to the four MVs being moved from SMS to SSS offset by the USNS ZEUS (T-ARC 7) moving from SSS to SMS.

APF-N – The increase in FY 2019 is due to ESBs being moved from SSS to APF-N, partial funding being recognized for ESB-5 (187 days) and USNS HERSHEL WILLIAMS (T-ESB-4) operating a full year as per diem offset by the USNS LEWIS AND CLARK (T-AKE 1) and USNS SACAGAWEA (T-AKE 2) moving from APF-N to CLF. The increase in FY 2020 is as a result of the ESB-5 operating a full year of per diem.

SSS - In FY 2018, MSC consolidated the SSS and EPF programs. The increase in FY 2019 is as a result of USNS BURLINGTON (T-EPF 10) operating a full year as per diem and USNS PUERTO RICO (T-EPF 11) for 197 days. USNS CATAWBA (T-ATF 168) was scheduled to deactivate in FY 2020 but has been restored to a Full Operating Status (FOS) until FY 2021.

Reimbursable Orders ($ Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Current Estimate	$2,727.2	$2,866.8	$3,570.5

Orders for MSC equate to revenue. Variances are due to changes in per diem days, fuel price changes, and requirement to attain zero AOR in FY 2020.

Direct Labor Hours (000):	**FY 2018**	**FY 2019**	**FY 2020**
Current Estimate	17,507	17,540	17,766

NARRATIVE
DEPARTMENT OF THE NAVY
TRANSPORTATION – MILITARY SEALIFT COMMAND
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Direct labor hours refer to Civilian Mariners only.

The increase in FY 2019 is due to full staffing of the USNS HERSHEL WILLIAMS (T-ESB-4) and approved crew for T-ATS 1 and 2.

The increase in FY 2020 is due to addition of USNS NEWPORT (T-EPF 12), T-ATS 1 and 2, and full manning of USNS MIGUEL KEITH (T-ESB-5).

Performance Indicators: Program Performance is measured by ship availability days, which measures days against plan that ships are actually available to perform the function for which they were intended. Any change in ship operations such as Full Operating Status to Reduced Operating Status, transitioning ships between coasts, or changing ship status (e.g., from ROS-15 days, ROS-30 days or ROS-45 days) are coordinated with the respective MSC customer.

Unit Cost:	**FY 2018**	**FY 2019**	**FY 2020**
CLF	$132,233	$126,120	$134,565
SMS	$42,627	$49,561	$51,930
APF-N	$67,666	$71,487	$91,086
SSS	$73,145	$62,558	$71,797

Unit Cost: The method established to authorize and control costs. Allows activities to respond to workload changes in execution by encouraging reduced costs when workload declines and allowing appropriate increases in costs when customers request additional services. MSC operates under four distinct unit cost goals - one for each of the programs. All programs have cost/per day as the unit cost basis (costs include only per diem expenses in the annual operating budget (AOB). Ship mix – (e.g., class of ships and operating status) impacts unit cost levels. Costs in all years are primarily a function of inflation, fuel, Civilian Mariner salaries, and Maintenance and Repair (M&R).

Performance Rate Change From Prior Year:	**FY 2018**	**FY 2019**	**FY 2020**
CLF	-4.5%	6.6%	11.9%
SMS	-28.4%	31.5%	30.4%
APF-N	-36.5%	-1.5%	60.3%
SSS	-25.8%	2.2%	24.0%

Percentages reflect the change in unit cost from year to year and reflect changes in ship mix stated in the significant changes section. Increase in unit cost in FY 2020 is primarily due to new ships coming online and additional costs to support those ships.

NARRATIVE
DEPARTMENT OF THE NAVY
TRANSPORTATION – MILITARY SEALIFT COMMAND
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Staffing:

Civilian/Military ES & Workyears:	FY 2018	FY 2019	FY 2020
Civilian End Strength	6,653	6,675	6,840
Civilian Workyears (straight time)	8,976	8,662	8,738
Military End Strength	161	165	165
Military Workyears	161	165	165

Civilian Personnel: End Strength and work-year changes associated mainly with changes to ship mix.

Military Personnel: No changes

Capital Investment Program (CIP):

CIP Authority ($Millions):	FY 2018	FY 2019	FY 2020
Equipment, Non-ADP / Telecom	$0.0	$0.0	$0.0
Equipment, ADPE / Telecom	$8.1	$4.0	$4.9
Software Development	$0.0	$0.0	$0.0
Minor Construction	$0.0	$1.4	$0.0
Total	$8.1	$5.4	$4.9

Information Technology efforts represent the predominant share of CIP authority. These efforts include migration to a paperless environment, secure storage of engineering materials, Automated Data Processing Equipment for Shipboard local area networks (LANs), systems development efforts – (e.g., mandated travel system, financial management system), migration of civilian mariner (CIVMAR) pay function to Defense Finance and Accounting Service, and Next Generation Wideband. The above represents MSC requirements to implement unclassified and classified Local Area Networks (LANS) at all ships, offices, area command, and headquarters world-wide.

REVENUE AND EXPENSES
DEPARTMENT OF THE NAVY
TRANSPORTATION - MILITARY SEALIFT COMMAND
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	FY 2018	FY 2019	FY 2020
Revenue:			
Gross Sales			
Operations	2,727.2	2,866.8	3,570.5
Capital Surcharges	0.0	0.0	0.0
Capital Investment Recovery	0.0	0.0	0.0
Other Income			
Total Income	2,727.2	2,866.8	3,570.5
Expenses			
Cost of Materiel Sold from Inventory			
Salaries and Wages:			
Military Personnel Compensation & Benefits	15.5	16.1	16.1
Civilian Personnel Compensation & Benefits	846.7	822.6	850.8
Travel and Transportation of Personnel	38.0	38.3	44.7
Material & Supplies (Internal Operations)	537.7	539.6	602.3
Equipment	118.9	95.8	108.3
Other Purchases from NWCF	2.4	2.5	2.5
Transportation of Things	10.0	11.4	11.6
Capital Investment Recovery	0.0	0.0	0.0
Printing and Reproduction	0.4	0.4	0.4
Advisory and Assistance Services	0.0	0.0	0.0
Rent, Communication, Utilities & Misc Charges	453.4	414.6	420.4
Other Purchased Services	1,022.4	993.5	1,257.1
Total Expenses	3,045.3	2,934.7	3,314.3
Work in Process Adjustment	0.0	0.0	0.0
Comp Work for Activity Retention Adjustment	0.0	0.0	0.0
Cost of Goods Sold	3,045.3	2,934.7	3,314.3
Operating Result	-318.1	-68.0	256.3
Adjustments Affecting NOR	0.0	0.0	0.0
Capital Surcharges	0.0	0.0	0.0
Extraordinary Expenses Unmatched	0.0	0.0	0.0
Other Changes Affecting NOR (All Others)	0.0	0.0	0.0
Net Operating Result	-318.1	-68.0	256.3
PY AOR	179.8	-138.3	-206.3
TOTAL AOR	-138.3	-206.3	50.0
Non-Recoverable Adjustments impacting AOR	0.0	0.0	-50.0
AOR for budget purposes	-138.3	-206.3	0.0

SOURCES OF NEW ORDERS & REVENUE
DEPARTMENT OF THE NAVY
TRANSPORTATION - MILITARY SEALIFT COMMAND
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	FY 2018	FY 2019	FY 2020
1. New Orders	2,873.3	2,866.8	3,570.5
a. Orders from DoD Components:	2,865.9	2,858.7	3,561.6
Department of the Navy	2,779.0	2,763.8	3,379.6
O & M, Navy	2,743.9	2,725.6	3,343.1
O & M, Marine Corps	26.4	28.9	26.1
O & M, Navy Reserve	0.0	0.0	0.0
O & M, Marine Corp Reserve	0.0	0.0	0.0
Aircraft Procurement, Navy	0.0	0.0	0.0
Weapons Procurement, Navy	0.0	0.0	0.0
Ammunition Procurement, Navy/MC	0.0	0.0	0.0
Shipbuilding & Conversion, Navy	0.0	0.0	0.0
Other Procurement, Navy	8.6	9.4	10.4
Procurement, Marine Corps	0.0	0.0	0.0
Family Housing, Navy/MC	0.0	0.0	0.0
Research, Dev., Test, & Eval., Navy	0.0	0.0	0.0
Military Construction, Navy	0.0	0.0	0.0
National Defense Sealift Fund	0.0	0.0	0.0
Other Navy Appropriations	0.0	0.0	0.0
Other Marine Corps Appropriations	0.0	0.0	0.0
Department of the Army	0.0	0.0	0.0
Army Operation & Maintenance	0.0	0.0	0.0
Army Res, Dev, Test, Eval	0.0	0.0	0.0
Army Procurement	0.0	0.0	0.0
Army Other	0.0	0.0	0.0
Department of the Air Force	20.0	21.8	48.0
Air Force Operation & Maintenance	20.0	21.8	48.0
Air Force Res, Dev, Test, Eval	0.0	0.0	0.0
Air Force Procurement	0.0	0.0	0.0
Air Force Other	0.0	0.0	0.0
DOD Appropriation Accounts	66.9	73.1	134.0
Base Closure & Realignment	0.0	0.0	0.0
Operation & Maintenance Accounts	30.6	33.4	37.1
Res, Dev, Test & Eval Accounts	36.3	39.6	96.9
Procurement Accounts	0.0	0.0	0.0
Defense Emergency Relief Fund	0.0	0.0	0.0
DOD Other	0.0	0.0	0.0
b. Orders from other Fund Activity Groups	7.4	8.1	9.0
c. Total DoD	2,873.3	2,866.8	3,570.5
d. Other Orders:	0.0	0.0	0.0
Other Federal Agencies	0.0	0.0	0.0
Foreign Military Sales	0.0	0.0	0.0
Non Federal Agencies	0.0	0.0	0.0
2. Carry-In Orders	225.9	372.0	372.0
3. Total Gross Orders	3,099.2	3,238.8	3,942.5
a. Funded Carry-Over before Exclusions	372.0	372.0	372.0
4. Revenue(-)	2,727.2	2,866.8	3,570.5
5. End of Year Work-In-Process (-)	0.0	0.0	0.0
6. FMS, BRAC, Other Federal, Non-Federal orders, and Inst. MRTFB (-)	0.0	0.0	0.0
7. Funded Carryover	367.2	367.2	367.2

Note: Line 5 (End of Year Work-In-Process) is adjusted for Non-DOD BRAC, FMS, and Institutional MRTFB

CHANGES IN THE COSTS OF OPERATIONS
DEPARTMENT OF THE NAVY
TRANSPORTATION- MILITARY SEALIFT COMMAND
FISCAL YEAR (FY) 2020 DEPARTMENT OF THE NAVY BUDGET SUBMISSION
MARCH 2019
(DOLLARS IN MILLIONS)

	Costs
FY 2018 Estimated Actuals	**3,045.0**
FY 2019 President's Budget:	**2,857.0**
Estimated Impact in FY 2019 of Actual FY 2018 Experience:	**0.0**
Pricing Adjustments:	**77.7**
Civilian Personnel	0.0
Fuel Price	74.9
General Purchase Inflation	2.8
Program Changes:	
FY 2019 Current Estimate:	**2,934.7**
Pricing Adjustments:	**76.9**
Annualization of Prior Year Pay Raises	**0.0**
Civilian Personnel	0.0
Military Personnel	0.0
FY 2020 Pay Raise	**-12.3**
Civilian Personnel	-12.3
Military Personnel	0.0
Fuel Price Changes	85.9
General Purchase Inflation	3.4
Other Price Changes	**0.0**
Working Capital Fund Price Changes	0.0
Productivity Initiatives and Other Efficiencies:	**0.0**
Program Changes:	**302.6**
Increase due to USNS CATAWBA deferred deactivation	8.9
Decrease deactivation costs for T-ATF 168 USNS CATAWBA	-1.4
Maintenance/Industrial Assist/Overhaul increase	87.1
Engineering Equipment T-ALTs	58.9
T-AH SLEP correction	8.4
ESB-5 will operate a full year as per diem	5.5
EPF-11 will operate a full year as per diem	4.4
Increase in fuel barrels/steaming days for new ships	54.4
Increase in Civilian Mariners in support of new ships	34.8
Increase in Harbor Tug Operatins Ship Charter	8.0
Maintenance backlog (AS 39 USS EMORY S. LAND)	33.6
Other Changes:	**0.0**
Capital Investment Recovery	0.0
FY 2020 Estimate:	**3,314.3**

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CAPITAL INVESTMENT SUMMARY
DEPARTMENT OF THE NAVY
TRANSPORTATION- MILITARY SEALIFT COMMAND
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

		FY 2018		FY 2019		FY 2020	
Line #	Description	Quantity	Total Cost	Quantity	Total Cost	Quantity	Total Cost
1	**Non-ADPE and Telecom Equipment >= $.250M**	**0**	**$0.000**	**0**	**$0.000**	**0**	**$0.000**
	- Vehicles	0	$0.000	0	$0.000	0	$0.000
	- Material Handling	0	$0.000	0	$0.000	0	$0.000
	- Installation Security	0	$0.000	0	$0.000	0	$0.000
	- Quality Control/Testing	0	$0.000	0	$0.000	0	$0.000
	- Medical Equipment	0	$0.000	0	$0.000	0	$0.000
	- Machinery	0	$0.000	0	$0.000	0	$0.000
	- Support Equipment	0	$0.000	0	$0.000	0	$0.000
2	**ADPE and Telecom Equipment >= $.250M**	**0**	**$8.056**	**0**	**$4.000**	**0**	**$4.900**
	- Computer Hardware (Production)	0	$8.056	0	$4.000	0	$4.900
	- Computer Hardware (Network)	0	$0.000	0	$0.000	0	$0.000
	- Computer Software (Operating)	0	$0.000	0	$0.000	0	$0.000
	- Telecommunications	0	$0.000	0	$0.000	0	$0.000
	- Other Support Equipment	0	$0.000	0	$0.000	0	$0.000
3	**Software Development >= $.250M**	**0**	**$0.000**	**0**	**$0.000**	**0**	**$0.000**
	- Internally Developed	0	$0.000	0	$0.000	0	$0.000
	- Externally Developed	0	$0.000	0	$0.000	0	$0.000
4	**Minor Construction (>= $.250M and <= $2.000M)**	**0**	**$0.000**	**0**	**$1.424**	**0**	**$0.000**
	- Replacement Capability	0	$0.000	0	$0.000	0	$0.000
	- New Construction	0	$0.000	0	$1.424	0	$0.000
	- Environmental Capability	0	$0.000	0	$0.000	0	$0.000
	Grand Total	**0**	**$8.056**	**0**	**$5.424**	**0**	**$4.900**
	Total Capital Outlays		**$6.120**		**$5.424**		**$4.900**
	Total Capital Investment Recovery		**$0.000**		**$0.000**		**$0.000**

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Department of the Navy/ Transportation	#002 - ADPE						Military Sealift Command		
	FY 2018			FY 2019			FY 2020		
ADP Equipment	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Computer Hardware (Production)	1	8,056	$8,056	1	4,000	$4,000	1	4,900	$4,900
Computer Hardware (Network)	0	-	$0	0	-	$0	0	-	$0
Computer Software (Operating System)	0	-	$0	0	-	$0	0	-	$0
Telecommunications	0	-	$0	0	-	$0	0	-	$0
Other Support Equipment	0	-	$0	0	-	$0	0	-	$0
Total	1	8,056	$8,056	1	4,000	$4,000	1	4,900	$4,900

Justification:

FY18 - FY20

Consolidated Afloat Network Enterprise Services (CANES)

The above represents MSC requirements to implement unclassified and classified LANS at all ships, offices, area command, and headquarters world-wide.
DoD and DoN CIO have directed the eradication of Windows XP on all networks. Consolidated Afloat Network Enterprise Services (CANES) is the Navy's next generation Windows 7 (WIN7) based Afloat tactical network for all enclaves which will replace the Integrated Shipboard Network Systems (ISNS) Program of Record (POR). To ensure compliance for MSC's ISNS-based platforms, SPAWAR has been enlisted to develop a MSC specific variant of CANES. This will be a permanent solution that provides network infrastructure, basic network information distribution services, access to the DISN Wide Area Network (SIPRNET and NIPRNET) and hosted Command and Control (C2) applications.

Starting in FY17 the Windows XP eradication plan will span over a 5 years going into FY2021. A life span financial plan is being worked on and can be furnished when complete upon request.

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Select Business Area	#004 - Minor Construction						Military Sealift Command		
	FY 2018			FY 2019			FY 2020		
Minor Construction	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Replacement	0	-	$0	0	-	$0	0	-	$0
New Construction	0	-	$0	2	712	$1,424	0	-	$0
Environmental Capability	0	-	$0	0	-	$0	0	-	$0
Total	0	-	$0	2	712	$1,424	0	-	$0

Justification:

FY 2019
BLDG. SP64 Addition (new construction) $1,100,990
This project was previously approved in FY17 however the timeline has been pushed back to FY19. Build single story addition on rear of Building SP64 (approx. 2700 sq ft). Addition will permit seating for 25 personnel and additionally house a 15-person computer-based training facility.

A/E PCAS	33,844
ENG PCAS	9,090
SIOH	72,720
Construction	985,336

SP64 Backup Generator. (Replace/ New Construction) $323,010
This project was initiated in FY17 and was later put on hold in order to re-evaluate the requirements to support the new SP64 addition in FY19. The backup generator will ensure continuous electrical service to MSC Headquarters allowing it to remain online and mission ready to support MSC operations worldwide.

SIOH	23,280
PCAS	8,730
Construction	291,000

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CAPITAL BUDGET EXECUTION
DEPARTMENT OF THE NAVY
TRANSPORTATION- MILITARY SEALIFT COMMAND
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

FY	Line Item	Category	Capability/Project	Initial Request	Current Proj Cost	Approved Change	Explanation
2018	**1**	**Non ADP**		**$0.000**	**$0.000**	**$0.000**	
			Vehicles	$0.000	$0.000	$0.000	
			Material Handling	$0.000	$0.000	$0.000	
			Quality Control/Testing	$0.000	$0.000	$0.000	
			Machinery	$0.000	$0.000	$0.000	
			Support Equipment	$0.000	$0.000	$0.000	
	2	**ADP**		**$10.200**	**$8.056**	**($2.144)**	
			Computer Hardware (Production)	$10.200	$8.056	($2.144)	Actual Execution Data
			Computer Hardware (Network)	$0.000	$0.000	$0.000	
			Computer Software (Operating)	$0.000	$0.000	$0.000	
			Telecommunications	$0.000	$0.000	$0.000	
			Other Support Equipment	$0.000	$0.000	$0.000	
	3	**Software**		**$0.000**	**$0.000**	**$0.000**	
			Internally Developed	$0.000	$0.000	$0.000	
			Externally Developed	$0.000	$0.000	$0.000	
	4	**Minor Construction**		**$0.000**	**$0.000**	**$0.000**	
			Replacement	$0.000	$0.000	$0.000	
			New Construction	$0.000	$0.000	$0.000	
			Environmental Capability	$0.000	$0.000	$0.000	
TOTAL FY 2018 CIP Program				**$10.200**	**$8.056**	**($2.144)**	

FY	L.I.	Category	Capability/Project	I.R	C.P.R	A.C.	Explanation
2019	**1**	**Non ADP**		**$0.000**	**$0.000**	**$0.000**	
			Vehicles	$0.000	$0.000	$0.000	
			Material Handling	$0.000	$0.000	$0.000	
			Quality Control/Testing	$0.000	$0.000	$0.000	
			Machinery	$0.000	$0.000	$0.000	
			Support Equipment	$0.000	$0.000	$0.000	
	2	**ADP**		**$4.000**	**$4.000**	**$0.000**	
			Computer Hardware (Production)	$4.000	$4.000	$0.000	
			Computer Hardware (Network)	$0.000	$0.000	$0.000	
			Computer Software (Operating)	$0.000	$0.000	$0.000	
			Telecommunications	$0.000	$0.000	$0.000	
			Other Support Equipment	$0.000	$0.000	$0.000	
	3	**Software**		**$0.000**	**$0.000**	**$0.000**	
			Internally Developed	$0.000	$0.000	$0.000	
			Externally Developed	$0.000	$0.000	$0.000	
	4	**Minor Construction**		**$1.424**	**$1.424**	**$0.000**	
			Replacement	$0.000	$0.000	$0.000	
			New Construction	$1.424	$1.424	$0.000	
			Environmental Capability	$0.000	$0.000	$0.000	
TOTAL FY 2019 CIP Program				**$5.424**	**$5.424**	**$0.000**	

FY	L.I.	Category	Capability/Project	I.R	C.P.R	A.C.	Explanation
2020	**1**	**Non ADP**		**$0.000**	**$0.000**	**$0.000**	
			Vehicles	$0.000	$0.000	$0.000	
			Material Handling	$0.000	$0.000	$0.000	
			Quality Control/Testing	$0.000	$0.000	$0.000	
			Machinery	$0.000	$0.000	$0.000	
			Support Equipment	$0.000	$0.000	$0.000	
	2	**ADP**		**$4.900**	**$4.900**	**$0.000**	
			Computer Hardware (Production)	$4.900	$4.900	$0.000	
			Computer Hardware (Network)	$0.000	$0.000	$0.000	
			Computer Software (Operating)	$0.000	$0.000	$0.000	
			Telecommunications	$0.000	$0.000	$0.000	
			Other Support Equipment	$0.000	$0.000	$0.000	
	3	**Software**		**$0.000**	**$0.000**	**$0.000**	
			Internally Developed	$0.000	$0.000	$0.000	
			Externally Developed	$0.000	$0.000	$0.000	
	4	**Minor Construction**		**$0.000**	**$0.000**	**$0.000**	
			Replacement	$0.000	$0.000	$0.000	
			New Construction	$0.000	$0.000	$0.000	
			Environmental Capability	$0.000	$0.000	$0.000	
TOTAL FY 2020 CIP Program				**$4.900**	**$4.900**	**$0.000**	

CARRYOVER RECONCILIATION
DEPARTMENT OF THE NAVY
TRANSPORTATION - MILITARY SEALIFT COMMAND
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	FY 2018	FY 2019	FY 2020
Part 1			
1. Net Carry-In	225.9	372.0	372.0
2. Revenue	2,727.2	2,866.8	3,570.5
3. New Orders	2,873.3	2,866.8	3,570.5
4. Exclusions:			
Foreign Military Sales	-	-	-
Base Realignment and Closure	-	-	-
Other Federal Department and Agencies	-	-	-
Non-Federal and Others	-	-	-
Institutional Major Range & Test Facility Base	-	-	-
OUSD(C) Approved Carryover Waiver	-	-	-
5. Orders for Carryover Calculation	2,873.3	2,866.8	3,570.5
6. Weighted Average Outlay Rate	69.3%	69.3%	69.0%
7. Carryover Rate	30.7%	30.7%	31.0%
8. Allowable Carryover	885.8	883.3	1,110.3
Allowable Carryover(First Year)	882.1	880.1	1,106.9
Allowable Carryover (Second Year Procurement-funded Orders)	3.8	3.2	3.5
Part II			
9. Balance of Customer Order at Year End	372.0	372.0	372.0
10. Work-in-progress	-	-	-
11. Exclusions:			
Foreign Military Sales	4.8	4.8	4.8
Base Realignment and Closure	-	-	-
Other Federal Department and Agencies	-	-	-
Non-Federal and Others	-	-	-
Institutional Major Range & Test Facility Base	-	-	-
OUSD(C) Approved Carryover Waiver	-	-	-
12. Calculated Actuals Carryover	367.2	367.2	367.2

Some totals may not add due to rounding.
EXWC,NSWC,NUWC,NAWCDIV,SPAWAR,NRL use RDTEN rates.

10. Facilities Engineering Commands

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NARRATIVE
DEPARTMENT OF THE NAVY
BASE SUPPORT - FACILITIES ENGINEERING COMMANDS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
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Mission Statement / Overview:
The mission of the Facilities Engineering Commands (FECs) is to provide facility services and construction acquisition and oversight, utility services, facilities sustainment, transportation support, engineering services and environmental services required by Navy Installation Command activities, Marine Corps Installation Command activities, and afloat, ashore operating forces and other activities. As a member of the Naval Facilities Engineering Command (NAVFAC), the FECs strengthen the Navy and Marine Corps readiness through work across the facility lifecycle.

The FY 2020 plan focuses on consolidating support structures and streamlining processes to obtain greater effectiveness and efficiency across the enterprise and improve military readiness. To accomplish this, beginning in FY 2020, the Facilities Engineering Commands (FECs) will transition their base support products and services out of the Navy Working Capital Fund (NWCF) to a mission funding model consistent with other NAVFAC service delivery models. In this matter, funding traditionally provided to the FECs through NWCF reimbursable transactions will be realigned to Commander, Navy Installations Command (CNIC) who will provide direct funding authority to the NAVFAC to execute base support and maintenance functions. By streamlining and consolidating NAVFAC and the FECs into a mission funded model and aligning funding with CNIC, the Navy will have a focused voice for the shore enterprise to provide greater accountability, consistency, and innovation aimed to ultimately strengthen military readiness.

Activity Group Composition:

Activity	Location
FEC Europe - Africa - Southwest Asia	Naples, Italy
FEC Far East	Yokosuka, Japan
FEC Marianas	Agana, Guam, Marianas Islands
FEC Hawaii	Pearl Harbor, Hawaii
FEC Mid-Atlantic	Norfolk, Virginia
FEC Northwest	Silverdale, Washington
FEC Southeast	Jacksonville, Florida
FEC Southwest	San Diego, California
FEC Washington	Washington, D.C.

Base Support Products and Services:

Utilities and Energy Management: Utilities and energy management represents 66% of the Base Support budget and changes in purchased utility costs continue to impact the cost of operations. In order to manage these costs, the FECs are implementing energy conservation measures that are reducing the quantities of electricity and natural gas consumed. These initiatives include managing the kinds of fuel purchased; implementing efficient ways of using fuel to produce

steam; aggressive energy management and system recap based on linear segments and consistent system condition information; maximizing the use of energy projects; where feasible, increasing the use of alternative sources of energy such as geothermal, ocean thermal, wind, solar, and wave; and deploying information assured industrial control systems.

Utilities Operations and Sustainment: Utilities operations and sustainment results in increased reliability and decreased loss of service frequency/duration involving utility systems, reducing impacts to Navy missions. Operational services include preventative maintenance, replacement of components at the end of their useful life, and repair of critical utility infrastructure, equipment, and distribution networks. Sustainment investments help prevent increased environmental violations for system operations, accelerated rates of deterioration, shortened service lives of utility systems, and increased restoration costs as systems and equipment degrade.

Maintenance and Repair: Maintenance and repair or facilities sustainment addresses minor maintenance repairs, preventative maintenance, and repairs and upgrades of buildings and other non-utilities infrastructure. It corrects decreased reliability and increased loss of service frequency/duration involving buildings and other critical infrastructure, reducing impacts to Navy missions.

Transportation: Budgeted initiatives to standardize and lower vehicles and equipment operating costs include:

- Central management of Transportation NWCF rates and recapitalization
- Management of Transportation across product lines at all FECs
- Lease passenger carrying vehicles from General Services Administration
- Institutionalize Vehicle Allocation Methodology across all FECs
- Downsize vehicles and equipment to minimum requirements, including neighborhood electric vehicles and other slow moving vehicles to reduce the per mile cost including fuel
- Reduce number of vehicles based on usage and consideration of other Fleet Management decisions (e.g. car share, vehicle pooling, etc.)
- Standardize vehicle and equipment type, sizes, and configurations
- Optimize use of lease and short term rentals for vehicles and heavy equipment

Facility Support Contract Management and Facility Services (FMFS): The cost of facility sustainment, utility, and Transportation facility support contracts is trending down slightly due to market forces and economies of scale through maximizing the use of regional contracts.

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Continued investment in facility support contracts program management and acquisition enables leveraging best practices and process initiatives that have a potential for large return on investment by improving contract performance and reducing procurement costs. Recent rule changes will allow for longer-term limits for Base Operating Support (BOS) contracts which will reduce the frequency and, therefore, cost of re-procurement.

In order to create efficiencies for BOS contract specification writers, FMFS developed a facility support contract template that standardizes required performance levels across the Navy for each of the shore installation service areas (janitorial, facility maintenance, port operations, galley operations, utility system operations and maintenance, Transportation operations and maintenance, grounds maintenance). The FEC or Public Works Department (PWD) uses these templates when renewing service contracts. Each template has the current list of Commander, Navy Installations (CNIC) Common Output Levels (COL), which are defined as differing levels of service for a particular shore installation service area.

Significant Changes Since the FY 2019 President's Budget:

Beginning FY 2020, the FEC will transfer from NWCF to mission funding. As a mission fund activity, funding traditionally provided to the FECs through NWCF reimbursable transactions will be realigned to CNIC who will provide direct funding authority to NAVFAC to execute base support and maintenance functions that were previously purchased by customers through NWCF.

Civilian labor estimates in FY 2019 are higher than previously budgeted due to recent successes in filling positions. This has allowed work to be restored to in-house performance in those instances where it had been diverted to contractor. The costs for the civilian personnel are increasing due to one more paid day.

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Financial Profile:

Revenue/Expense/Operating Results ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Orders	$2,964.3	$2,992.6	$0.0
Revenue	$3,022.4	$2,915.3	$165.6
Expense	$3,083.0	$3,083.2	$165.9
Operating Results	($60.5)	($167.9)	($0.3)
Other Changes Affecting NOR	$0.0	($8.2)	$0.0
Net Operating Results (NOR)	($60.5)	($176.1)	($0.3)
Other Changes Affecting AOR	$0.0	$0.0	$122.3
Accumulated Operating Results (AOR)	$298.8	$122.7	$0.0

Some totals may not add due to rounding.

Orders, Revenue and Expense: The changes in orders, revenue, and expense in FY 2020 are due to the transition of FECs from NWCF to Mission Funding. The FY 2020 budget estimates includes residual cost of $165.9M for work carried in from FY 2019 with residual efforts executed in FY 2020.

Collections/Disbursements/Outlays ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Collections	$3,034.2	$2,904.8	$226.0
Disbursements	$3,026.1	$3,056.3	$221.1
Outlays	($8.1)	$151.5	($4.9)

Some totals may not add due to rounding.

Collections: FY 2018 reflects actual execution and anticipated increase in sales and the ability to collect aged accounts receivable.

Disbursements: FY2018 reflects actual execution and anticipated fuel savings through the end of fiscal year. FY2019 and FY 2020 represents budgeted expenses, CIP outlays, and closing out prior period obligations.

Foreign Currency Issues: Impact FEC Europe - Africa - Southwest Asia and FEC Far East's operating and outlay results. The following shows impacted FEC costs:

Costs Subject to Foreign Currency ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Costs to be Paid in EUROS	$64.3	$73.5	n/a
Costs to be Paid in YEN	$206.3	$180.7	n/a
Total Costs to be Paid in Foreign Currency	$270.5	$254.2	n/a

Some totals may not add due to rounding.

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Workload:

Direct Labor Hours (000):	**FY 2018**	**FY 2019**	**FY 2020**
Current Estimate	13,373	12,883	n/a

Direct labor hours are driven by workload and mission requirements, as such, the workforce continues to be sized in accordance with funded workload. The changes in direct labor hours are estimated based on supporting customer workload, and efforts in filling positions vacated during the hiring freeze and sequestration.

Unit Cost: The FEC's specific outputs and associated unit costs are identified in the following table.

PRODUCT/SERVICE	**UNIT OF MEASURE**	**UNIT COST FY 2018**	**UNIT COST FY 2019**	**UNIT COST FY 2020**
UTILITY SERVICES				
ELECTRICITY	MWH	152.90	163.08	n/a
POTABLE WATER	KGAL	11.61	10.67	n/a
SALT/RIVER WATER	KGAL	1.02	2.37	n/a
STEAM	MBTU	43.53	48.38	n/a
SEWAGE	KGAL	12.76	11.89	n/a
NATURAL GAS	MBTU	6.41	9.99	n/a
COMPRESSED AIR	KCF	1.56	1.93	n/a
SANITATION SERVICES				
REFUSE COLL & DISPOSAL I	CUYD	14.59	15.33	n/a
REFUSE COLL & DISPOSAL II	TONS	391.45	387.97	n/a
PEST CONTROL	HOURS	57.42	58.04	n/a
HAZ WASTE I	GAL	6.53	2.41	n/a
HAZ WASTE II	LBS	1.76	1.76	n/a
INDUST WASTE	KGAL	105.22	94.40	n/a
ENVIRONMENTAL ENG	HOURS	98.50	117.81	n/a
ENVIRONMENTAL LAB	TEST	39.48	61.73	n/a
TRANSPORTATION SERVICES				
EQUIP RENTAL	HOURS	3.29	3.72	n/a
VEHICLE OPS	HOURS	68.49	65.05	n/a
VEHICLE MAINTENANCE	SRO	187.20	164.11	n/a
MAINTENANCE & REPAIR	DLH	86.16	84.49	n/a

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The FEC's units used in determining unit cost above are identified in the following table.

PRODUCT/SERVICE	UNIT OF MEASURE	UNITS FY 2018	UNITS FY 2019	UNITS FY 2020
UTILITY SERVICES				
ELECTRICITY	MWH	7,084,945	7,207,841	n/a
POTABLE WATER	KGAL	21,227,163	22,183,467	n/a
SALT/RIVER WATER	KGAL	8,898,779	7,908,964	n/a
STEAM	MBTU	5,569,015	5,626,437	n/a
SEWAGE	KGAL	15,220,453	16,624,911	n/a
NATURAL GAS	MBTU	3,442,027	3,977,742	n/a
COMPRESSED AIR	KCF	18,815,248	15,143,478	n/a
SANITATION SERVICES				
REFUSE COLL & DISPOSAL I	CUYD	916,922	813,374	n/a
REFUSE COLL & DISPOSAL II	TONS	31,533	29,608	n/a
PEST CONTROL	HOURS	72,746	64,115	n/a
HAZ WASTE I	GAL	67,702	60,000	n/a
HAZ WASTE II	LBS	21,670,794	20,773,341	n/a
INDUST WASTE	KGAL	266,040	225,724	n/a
ENVIRONMENTAL ENG	HOURS	45,280	37,731	n/a
ENVIRONMENTAL LAB	TEST	93,882	89,275	n/a
TRANSPORTATION SERVICES				
EQUIP RENTAL	HOURS	58,936,996	57,403,546	n/a
VEHICLE OPS	HOURS	922,314	959,264	n/a
VEHICLE MAINTENANCE	SRO	82,732	84,411	n/a
MAINTENANCE & REPAIR	DLH	5,402,013	5,549,236	n/a

Units of Measure Acronym List

MBTU	Million British Thermal Units	MWH	Mega Watt Hour
CUYD	Cubic Yard	SRO	Shop Repair Order
KCF	Thousand Cubic Feet	LBS	Pounds
KGAL	Thousand Gallons	TONS	Tons
DLH	Direct Labor Hours		

Stabilized/Composite Rates:	FY 2018	FY 2019	FY 2020
Composite Rate	0.35%	-1.96%	2.00%
Utilities	-2.07%	-1.86%	2.00%
Sanitation Services and Other Base Support	5.08%	-2.12%	2.00%

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Rate Changes	**FY 2018**	**FY 2019**	**FY 2020**
East Coast Utilities	-7.24%	1.52%	2.00%
West Coast Utilities	3.35%	-5.05%	2.00%
East Coast Other	5.34%	-3.43%	2.00%
West Cost Other	4.80%	-0.73%	2.00%

Performance Indicators: Among the key financial indicators for the FECs are operating results, annual rate changes, and unit costs. Other key corporate performance measures include timeliness, workforce safety, and client satisfaction. Timeliness is an extremely important client satisfaction indicator in the area of facilities sustainment. The Emergency Work Response Time – Schedule Adherence metric represents the percent of time that emergency work crews arrive on-scene within prescribed timelines. Another metric, Service/Minor/Specific Work Completion Date – Schedule Adherence, reflects the percent of time that work is completed on schedule. The minimum goal in either case is 90% as identified in the measures below.

Performance Measures (Schedule Adherence):	**FY 2018**	**FY 2019**	**FY 2020**
Emergency Work Response	90.0%	90.0%	n/a
Service/Minor/Specific Work Completion Date	90.0%	90.0%	n/a

Staffing:

Civilian/Military ES & Workyears:	**FY 2018**	**FY 2019**	**FY 2020**
Civilian End Strength	9,827	9,625	n/a
Civilian Workyears (straight time)	9,545	9,472	n/a
Military End Strength	80	78	n/a
Military Workyears	46	78	n/a

Civilian Personnel: Personnel resources are one of the most valuable assets to the FEC organization. The FEC management team continues to focus on the optimal mix and quantity of personnel required to ensure effectiveness in providing quality products and services to our customers. Beginning in FY 2020, the FEC workforce of 9,542 FTEs are realigned out of the NWCF to mission funding in the Operation and Maintenance, Navy (O&M,N) appropriation.

Military Personnel: Military end strength remains stable.

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Capital Investment Program (CIP) Authority ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Equipment, Non-ADP / Telecom	$8.6	$11.3	n/a
Equipment, ADPE / Telecom	$0.0	$0.0	n/a
Software Development	$0.0	$0.0	n/a
Minor Construction	$6.5	$11.9	n/a
Total CIP Authority	$15.1	$23.2	n/a

Some totals may not add due to rounding.

Capital investments for the FECs are an important element of successful operations that reflect required investments in facilities and infrastructure. FEC's CIP will acquire affordable and efficient capabilities to support customer requirements. Beginning in FY 2020, the FEC investment requirements are realigned out of the NWCF to mission funding in the Other Procurement, Navy (OPN) appropriation.

Carryover Compliance ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Net Carry-In	$146.4	$88.3	$165.6
Allowable Carryover	$841.9	$847.5	$6.4
Calculated Actual Carryover	$57.5	$119.4	$0.0
Delta (Actual-Allowable): Above Ceiling (+)/Below Ceiling (-)	($694.8)	($671.6)	($6.4)

Some totals may not add due to rounding.

Carryover for each year is within the allowable carryover limit.

REVENUE AND EXPENSES
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(DOLLARS IN MILLIONS)

	FY 2018	FY 2019	FY 2020
Revenue:			
Gross Sales			
Operations	3,011.3	2,890.6	165.6
Capital Surcharges	0.0	8.2	0.0
Capital Investment Recovery	11.1	16.5	0.0
Other Income			
Total Income	3,022.4	2,915.3	165.6
Expenses			
Cost of Materiel Sold from Inventory			
Salaries and Wages:			
Military Personnel Compensation & Benefits	9.6	9.8	0.0
Civilian Personnel Compensation & Benefits	820.7	825.5	0.0
Travel and Transportation of Personnel	12.8	7.3	0.0
Material & Supplies (Internal Operations)	258.4	281.6	0.0
Equipment	68.0	69.7	0.0
Other Purchases from NWCF	26.2	23.5	0.0
Transportation of Things	2.7	1.3	0.0
Capital Investment Recovery	11.1	16.5	0.0
Printing and Reproduction	1.0	1.3	0.0
Advisory and Assistance Services	0.0	0.1	0.0
Rent, Communication, Utilities & Misc Charges	1,040.0	1,123.7	0.0
Other Purchased Services	832.5	723.0	165.9
Total Expenses	3,083.0	3,083.2	165.9
Work in Process Adjustment	0.0	0.0	0.0
Comp Work for Activity Retention Adjustment	0.0	0.0	0.0
Cost of Goods Sold	3,083.0	3,083.2	165.9
Operating Result	-60.5	-167.9	-0.3
Adjustments Affecting NOR	0.0	-8.2	0.0
Capital Surcharges	0.0	-8.2	0.0
Extraordinary Expenses Unmatched	0.0	0.0	0.0
Other Changes Affecting NOR (All Others)	0.0	0.0	0.0
Net Operating Result	-60.5	-176.1	-0.3
PY AOR	359.3	298.8	122.7
TOTAL AOR	298.8	122.7	122.3
Non-Recoverable Adjustments impacting AOR	0.0	0.0	-122.3
AOR for budget purposes	298.8	122.7	0.0

SOURCES OF NEW ORDERS & REVENUE
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(DOLLARS IN MILLIONS)

	FY 2018	FY 2019	FY 2020
1. New Orders	2,964.3	2,992.6	0.0
a. Orders from DoD Components:	2,245.7	2,205.8	0.0
Department of the Navy	2,046.0	1,954.7	0.0
O & M, Navy	1,901.1	1,790.2	0.0
O & M, Marine Corps	47.1	39.7	0.0
O & M, Navy Reserve	25.7	25.7	0.0
O & M, Marine Corp Reserve	2.1	4.0	0.0
Aircraft Procurement, Navy	0.1	0.5	0.0
Weapons Procurement, Navy	0.0	0.0	0.0
Ammunition Procurement, Navy/MC	0.0	0.0	0.0
Shipbuilding & Conversion, Navy	3.7	3.3	0.0
Other Procurement, Navy	0.5	0.8	0.0
Procurement, Marine Corps	0.0	0.0	0.0
Family Housing, Navy/MC	62.6	81.4	0.0
Research, Dev., Test, & Eval., Navy	1.5	6.1	0.0
Military Construction, Navy	0.6	2.2	0.0
National Defense Sealift Fund	0.0	0.0	0.0
Other Navy Appropriations	1.3	0.9	0.0
Other Marine Corps Appropriations	0.0	0.1	0.0
Department of the Army	49.6	58.7	0.0
Army Operation & Maintenance	23.5	31.4	0.0
Army Res, Dev, Test, Eval	0.0	2.7	0.0
Army Procurement	0.0	0.1	0.0
Army Other	26.1	24.4	0.0
Department of the Air Force	14.6	15.2	0.0
Air Force Operation & Maintenance	9.6	11.3	0.0
Air Force Res, Dev, Test, Eval	0.0	0.0	0.0
Air Force Procurement	0.1	0.0	0.0
Air Force Other	4.9	3.8	0.0
DOD Appropriation Accounts	135.6	177.2	0.0
Base Closure & Realignment	0.3	10.8	0.0
Operation & Maintenance Accounts	64.9	110.9	0.0
Res, Dev, Test & Eval Accounts	3.0	4.1	0.0
Procurement Accounts	2.2	10.1	0.0
Defense Emergency Relief Fund	0.0	0.0	0.0
DOD Other	65.1	41.3	0.0
b. Orders from other Fund Activity Groups	442.6	470.8	0.0
c. Total DoD	2,688.4	2,676.6	0.0
d. Other Orders:	275.9	316.0	0.0
Other Federal Agencies	24.7	26.6	0.0
Foreign Military Sales	0.4	0.4	0.0
Non Federal Agencies	250.8	289.0	0.0
2. Carry-In Orders	146.4	88.3	165.6
3. Total Gross Orders	3,110.7	3,080.9	165.6
a. Funded Carry-Over before Exclusions	88.3	165.6	0.0
4. Revenue(-)	3,022.4	2,915.3	165.6
5. End of Year Work-In-Process (-)	0.0	0.0	0.0
6. FMS, BRAC, Other Federal, Non-Federal orders, and Inst. MRTFB (-)	30.7	46.2	0.0
7. Funded Carryover	57.5	119.4	0.0

Note: Line 5 (End of Year Work-In-Process) is adjusted for Non-DOD BRAC, FMS, and Institutional MRTFB

CHANGES IN THE COSTS OF OPERATIONS
DEPARTMENT OF THE NAVY
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COMMANDS FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
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(DOLLARS IN MILLIONS)

	Costs
FY 2018 Estimated Actuals	**3,083.0**
FY 2019 President's Budget:	**3,063.1**
Estimated Impact in FY 2019 of Actual FY 2018 Experience:	**0.0**
Pricing Adjustments:	**20.1**
Civilian Personnel	0.0
Fuel Price	15.9
General Purchase Inflation	4.1
Program Changes:	**0.0**
Decrease in Federal Employees Compensation Act (FECA) costs	-1.8
Increase in civilian workyears (Wys) to accommodate customer workload, (21 Wys)	2.3
Increase in overtime due to customer demand	3.4
Change in workforce mix	10.0
Decrease in contracted costs	-13.9
Other Changes:	**0.0**
Capital Investment Recovery	0.0
Facilities Sustainment, Restoration & Modernization	0.0
FY 2019 Current Estimate:	**3,083.2**
Pricing Adjustments:	**54.0**
Annualization of Prior Year Pay Raises	**0.1**
Civilian Personnel	0.0
Military Personnel	0.1
FY 2020 Pay Raise	**12.4**
Civilian Personnel	12.2
Military Personnel	0.2
Fuel Price Changes	-0.6
General Purchase Inflation	42.2
Other Price Changes	**0.0**
Working Capital Fund Price Changes	0.0
Productivity Initiatives and Other Efficiencies:	**0.0**
Program Changes:	**-2,971.3**
Workload changes. Realign Facilities Engineering Command (FEC) from Navy Working Capital Fund (NWCF) to Mission Funding.	-3,137.2
Residual FEC NWCF Workload	165.9
Other Changes:	**0.0**
FY 2020 Estimate:	**165.9**

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CAPITAL INVESTMENT SUMMARY
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(DOLLARS IN MILLIONS)

		FY 2018		FY 2019		FY 2020	
Line #	Description	Quantity	Total Cost	Quantity	Total Cost	Quantity	Total Cost
1	**Non-ADPE and Telecom Equipment >= $.250M**	**12**	**$8.627**	**13**	**$11.299**	**0**	**$0.000**
	- Vehicles	3	$2.375	3	$1.280	0	$0.000
	- Material Handling	6	$5.054	8	$8.470	0	$0.000
	- Installation Security	0	$0.000	0	$0.000	0	$0.000
	- Quality Control/Testing	0	$0.000	0	$0.000	0	$0.000
	- Medical Equipment	0	$0.000	0	$0.000	0	$0.000
	- Machinery	0	$0.000	0	$0.000	0	$0.000
	- Support Equipment	3	$1.198	2	$1.549	0	$0.000
2	**ADPE and Telecom Equipment >= $.250M**	**0**	**$0.000**	**0**	**$0.000**	**0**	**$0.000**
	- Computer Hardware (Production)	0	$0.000	0	$0.000	0	$0.000
	- Computer Hardware (Network)	0	$0.000	0	$0.000	0	$0.000
	- Computer Software (Operating)	0	$0.000	0	$0.000	0	$0.000
	- Telecommunications	0	$0.000	0	$0.000	0	$0.000
	- Other Support Equipment	0	$0.000	0	$0.000	0	$0.000
3	**Software Development >= $.250M**	**0**	**$0.000**	**0**	**$0.000**	**0**	**$0.000**
	- Internally Developed	0	$0.000	0	$0.000	0	$0.000
	- Externally Developed	0	$0.000	0	$0.000	0	$0.000
4	**Minor Construction (>= $.250M and <= $2.000M)**	**17**	**$6.481**	**19**	**$11.931**	**0**	**$0.000**
	- Replacement Capability	6	$0.916	7	$2.267	0	$0.000
	- New Construction	10	$4.387	11	$9.084	0	$0.000
	- Environmental Capability	1	$1.178	1	$0.580	0	$0.000
	Grand Total	**29**	**$15.108**	**32**	**$23.230**	**0**	**$0.000**
	Total Capital Outlays		**$13.411**		**$13.411**		**$0.000**
	Total Capital Investment Recovery		**$11.090**		**$16.509**		**$0.000**

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Select Business Area	#001 - Non-ADPE						Facilities Engineering Commands		
	FY 2018			FY 2019			FY 2020		
Non-ADP Equipment	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Vehicles	4	594	$2,375	3	427	$1,280	0	-	$0
Material Handling	6	842	$5,054	8	1,059	$8,470	0	-	$0
Installation Security	0	-	$0	0	-	$0	0	-	$0
Quality Control/ Testing	0	-	$0	0	-	$0	0	-	$0
Medical Equipment	0	-	$0	0	-	$0	0	-	$0
Machinery	0	-	$0	0	-	$0	0	-	$0
Support Equipment	3	399	$1,198	2	775	$1,549	0	-	$0
Total	13	664	$8,627	13	869	$11,299	0	-	$0

Justification:

As the Department of the Navy's provider of public works support and services, the Facilities Engineering Commands (FECs) depend heavily on Civil Engineering Support Equipment (CESE) to accomplish its mission. In the broadest sense, CESE encompasses automotive vehicles, construction equipment, railway equipment, fire-fighting equipment, and mobile weight handling equipment. Investments in Industrial Plant Equipment (IPE), to include items such as metal lathes and other heavy shop machinery may also be required to accomplish shop fabrications at the FECs.

Requested CESE and IPE will replace over-aged, deteriorated, or obsolete inventory covering the full range of public works functions, e.g., utilities and maintenance. All budgeted CESE and IPE have been determined to meet activity allowances and replacement economic criteria. All requested replacements are in support of public works workload. The age of existing equipment frequently contributes to downtime and deteriorating output. In particular, inventories of large equipment such as crawling cranes and/or truck cranes have critical safety lift requirements to meet workload needs.

Operational delays for repair or safety downtimes are offset by leasing where and when available. However, leasing equipment frequently ranges from 30% to 60% higher in cost per hour than in-house equipment. Replacements provide for more efficient and safe operations. Additionally, replacements offer the latest technology in public works support capabilities. The timing of placement of these new assets into operation varies depending on the size, complexity, vendor availability, and shipping. Generally, equipment cost avoidance begins within 30-60 days from receipt of item. Each FEC has conducted a comprehensive review of equipment inventories and determined an optimal economic approach to containing costs as well as maintaining minimum interruption to services. Proposed investments are essential to this strategy. If the proposed equipment is not purchased, substantial opportunity to provide safe and reliable services at the least cost to the Navy will be lost.

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Select Business Area	#004 - Minor Construction						Facilities Engineering Commands		
	FY 2018			FY 2019			FY 2020		
Minor Construction	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Replacement	6	153	$916	7	324	$2,267	0	-	$0
New Construction	10	439	$4,387	11	826	$9,084	0	-	$0
Environmental Capability	1	1,178	$1,178	1	580	$580	0	-	$0
Total	17	381	$6,481	19	628	$11,931	0	-	$0

Justification:

FEC minor construction projects represent the full range of public works facilities requirements for transportation, utilities, storage and maintenance. The proposed projects are limited to and strictly controlled by the Capital Investment Program (CIP) thresholds. None of the projects in this budget exceed current MILCON thresholds. Budgeted projects are for construction, expansion, or improvement of a complete and useable building, structure, or other real property.

Each FEC has conducted a comprehensive business review of its facilities needs and determined an optimal economic approach to cost containment, while ensuring that health and safety requirements are met and minimizing service interruptions. The proposed project priorities are determined by economic analyses which are based on cost effective payback solutions which produce the fastest return on investment. Generally, FEC projects have a payback on the initial investment of 5 years or less. Completion of health/safety and environmental compliance projects will provide for cost avoidance resulting from elimination of potential hazmat situations.

The proposed budget is essential to providing planned cost control and service reliability of the FEC plant account. If proposed projects are not approved, substantial opportunity to provide safe, environmentally compliant, and effective services at the least cost to the Navy will be lost.

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CAPITAL BUDGET EXECUTION
DEPARTMENT OF THE NAVY
BASE SUPPORT - FACILITIES ENGINEERING COMMANDS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

FY	Line Item	Category	Capability/Project	Initial Request	Current Proj Cost	Approved Change	Explanation
2018	**1**	**Non ADP**		**$9.476**	**$8.627**	**($0.849)**	
			Vehicles	$0.875	$2.375	$1.500	
			Material Handling	$6.951	$5.054	($1.897)	The authority was adjusted and projects were reprioritized.
			Quality Control/Testing	$0.000	$0.000	$0.000	
			Machinery	$0.000	$0.000	$0.000	
			Support Equipment	$1.650	$1.198	($0.452)	
	2	**ADP**		**$0.000**	**$0.000**	**$0.000**	
			Computer Hardware (Production)	$0.000	$0.000	$0.000	
			Computer Hardware (Network)	$0.000	$0.000	$0.000	
			Computer Software (Operating)	$0.000	$0.000	$0.000	
			Telecommunications	$0.000	$0.000	$0.000	
			Other Support Equipment	$0.000	$0.000	$0.000	
	3	**Software**		**$0.000**	**$0.000**	**$0.000**	
			Internally Developed	$0.000	$0.000	$0.000	
			Externally Developed	$0.000	$0.000	$0.000	
	4	**Minor Construction**		**$11.401**	**$6.481**	**($4.920)**	
			Replacement	$1.516	$0.916	($0.600)	The authority was adjusted and projects were reprioritized.
			New Construction	$9.435	$4.387	($5.048)	
			Environmental Capability	$0.450	$1.178	$0.728	
TOTAL FY 2018 CIP Program				**$20.877**	**$15.108**	**($5.769)**	

FY	L.I.	Category	Capability/Project	I.R	C.P.R	A.C.	Explanation
2019	**1**	**Non ADP**		**$7.463**	**$11.299**	**$3.836**	
			Vehicles	$0.750	$1.280	$0.530	Surchage
			Material Handling	$5.688	$8.470	$2.782	Surchage
			Quality Control/Testing	$0.000	$0.000	$0.000	
			Machinery	$0.000	$0.000	$0.000	
			Support Equipment	$1.025	$1.549	$0.524	Surchage
	2	**ADP**		**$0.000**	**$0.000**	**$0.000**	
			Computer Hardware (Production)	$0.000	$0.000	$0.000	
			Computer Hardware (Network)	$0.000	$0.000	$0.000	
			Computer Software (Operating)	$0.000	$0.000	$0.000	
			Telecommunications	$0.000	$0.000	$0.000	
			Other Support Equipment	$0.000	$0.000	$0.000	
	3	**Software**		**$0.000**	**$0.000**	**$0.000**	
			Internally Developed	$0.000	$0.000	$0.000	
			Externally Developed	$0.000	$0.000	$0.000	
	4	**Minor Construction**		**$7.565**	**$11.931**	**$4.366**	
			Replacement	$2.267	$2.267	$0.000	
			New Construction	$4.718	$9.084	$4.366	Surchage
			Environmental Capability	$0.580	$0.580	$0.000	
TOTAL FY 2019 CIP Program				**$15.028**	**$23.230**	**$8.202**	

FY	L.I.	Category	Capability/Project	I.R	C.P.R	A.C.	Explanation
2020	**1**	**Non ADP**		**$7.872**	**$0.000**	**($7.872)**	
			Vehicles	$1.812	$0.000	($1.812)	
			Material Handling	$5.610	$0.000	($5.610)	
			Quality Control/Testing	$0.000	$0.000	$0.000	FY 2020 FEC NWCF Transfers to General Fund
			Machinery	$0.000	$0.000	$0.000	
			Support Equipment	$0.450	$0.000	($0.450)	
	2	**ADP**		**$0.000**	**$0.000**	**$0.000**	
			Computer Hardware (Production)	$0.000	$0.000	$0.000	
			Computer Hardware (Network)	$0.000	$0.000	$0.000	
			Computer Software (Operating)	$0.000	$0.000	$0.000	
			Telecommunications	$0.000	$0.000	$0.000	
			Other Support Equipment	$0.000	$0.000	$0.000	
	3	**Software**		**$0.000**	**$0.000**	**$0.000**	
			Internally Developed	$0.000	$0.000	$0.000	
			Externally Developed	$0.000	$0.000	$0.000	
	4	**Minor Construction**		**$7.939**	**$0.000**	**($7.939)**	
			Replacement	$2.668	$0.000	($2.668)	
			New Construction	$5.271	$0.000	($5.271)	FY 2020 FEC NWCF Transfers to General Fund
			Environmental Capability	$0.000	$0.000	$0.000	
TOTAL FY 2020 CIP Program				**$15.811**	**$0.000**	**($15.811)**	

CARRYOVER RECONCILIATION
DEPARTMENT OF THE NAVY
BASE SUPPORT - FACILITIES ENGINEERING COMMANDS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	FY 2018	FY 2019	FY 2020
Part 1			
1. Net Carry-In	146.4	88.3	165.6
2. Revenue	3,022.4	2,915.3	165.6
3. New Orders	2,964.3	2,992.6	0.0
4. Exclusions:			
Foreign Military Sales	0.4	0.4	0.0
Base Realignment and Closure	0.3	10.8	0.0
Other Federal Department and Agencies	24.7	26.6	0.0
Non-Federal and Others	250.8	289.0	0.0
Institutional Major Range & Test Facility Base	0.0	0.0	0.0
OUSD(C) Approved Carryover Waiver	0.0	0.0	0.0
5. Orders for Carryover Calculation	2,688.0	2,665.8	0.0
6. Weighted Average Outlay Rate	68.7%	68.3%	0.0%
7. Carryover Rate	31.3%	31.7%	100.0%
8. Allowable Carryover	841.9	847.5	6.4
Allowable Carryover(First Year)	841.3	845.0	0.0
Allowable Carryover (Second Year Procurement-funded Orders)	0.5	2.5	6.4
Part II			
9. Balance of Customer Order at Year End	88.3	165.6	0.0
10. Work-in-progress	0.0	0.0	0.0
11. Exclusions:			
Foreign Military Sales	0.2	0.3	0.0
Base Realignment and Closure	0.4	0.8	0.0
Other Federal Department and Agencies	5.6	8.5	0.0
Non-Federal and Others	24.5	36.6	0.0
Institutional Major Range & Test Facility Base	0.0	0.0	0.0
OUSD(C) Approved Carryover Waiver	0.0	0.0	0.0
12. Calculated Actuals Carryover	57.5	119.4	0.0

Some totals may not add due to rounding.

11. Navy Supply Management

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NARRATIVE
DEPARTMENT OF THE NAVY
SUPPLY MANAGEMENT - NAVY
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Mission Statement/Overview:
Naval Supply Systems Command (NAVSUP) directly supports the Department of Navy (DON) to man, train, and equip the Fleet. NAVSUP provides critical supply support required to maintain the equipment readiness of Navy's weapon systems.

NAVSUP maintains a worldwide presence to provide supplies, services, and quality-of-life support to the Navy and Joint warfighter. The NAVSUP business lines are embedded throughout the Readiness Kill Chain, playing an imperative role within each phase of the Optimized Fleet Response Plan (O-FRP) to provide integrated supply support to Navy's operational and industrial activities. At each step, the NAVSUP enterprise is consistently evaluating business processes and performance to maximize up-stream readiness and forces available for operational tasking. As a global enterprise, NAVSUP is optimally positioned to directly engage and support customers through these demands.

Pillars of the NAVSUP enterprise include Weapon Systems Support (WSS) command, Business Systems Center (BSC), Navy Exchange (NEXCOM) command, and Fleet Logistics Centers (FLCs).

- WSS provides Fleet and program supply support for Naval weapon systems and propulsion plants. WSS specializes in lifecycle support, procurement of reusable material, and stock positioning. Leveraging Working Capital Fund authority, WSS procures and repairs reusable parts a lead-time in advance so material is available in time for customer operational needs.
- BSC is Navy's IT provider with responsibility to design, develop, and maintain information systems supporting activities in the functional areas of logistics, supply chain management, transportation, finance, and accounting. BSC integrates next generation technological advances into every supply chain process, investing in high-value technologies to improve processes and leveraging data analytics to fulfill Naval force requirements.
- NEXCOM supports personnel readiness through Navy quality-of-life programs and overseas NEX Retail stores and services, such as the Ships Store Program.
- NAVSUP also has eight globally positioned FLCs providing a full range of military operations and quality-of-life program support to maximize our reach to the Fleet.

Navy Working Capital Fund - Supply Management (NWCF-SM) contract authority is the DON's readiness enabler, ensuring the right material is provided where required, when needed, at the best cost which is vital to arming and sustaining the Navy and Marine Corps warfighting units. The NAVSUP mission is to perform supply chain management functions resulting in the sale of aviation and maritime repairable components, ship's store stock, and consumables to a wide

variety of customers. Other major customers include: DON shore activities, Army, Air Force, Defense Agencies, and other government agencies. NAVSUP also provides strong sailor and family support through contracting, resale, transportation, food service, and other quality-of-life programs.

What makes NWCF-SM unique is the outlay or payment resulting from obligations does not occur until material is delivered in the future, sometimes several years later. Through planning and modeling, the NAVSUP budget aligns with the anticipated demands resulting in collections through the sale of the delivered material. All costs related to acquiring material as well as providing products and services to customers are recovered through stabilized rate recovery elements such as prior year gains/losses, repair costs including attrition, distribution, and operating costs. The NWCF-SM budget submissions ensure cash remains solvent by accounting for all execution plans that impact total net outlay projections and cash balances through the budget horizon.

NAVSUP's execution of their unique contract authority enables responsive procurement, repair, and prepositioning of essential supplies in direct support of Navy's enhanced lethality. NAVSUP's contract authority allows for supply, repair, upgrade, and support of Navy's critical weapon systems a lead-time in advance so material is available in time for customer operational needs, essentially allowing obligations to occur prior to customer demand.

NAVSUP manages the following Budget Projects (BP) in order to organize the financial operations of NWCF-SM:

	Budget Project
Wholesale	
Aviation Consumables	BP34
Ship Repairables and Consumables	BP81
Aviation Repairables	BP85
Retail	
Ship's Store	BP21
General Consumables	BP28
Operations	
Operations and Reimbursables	BP91

Activity Group Composition:	**Location**
NAVSUP Weapon Systems Support (Maritime)	Mechanicsburg, Pennsylvania
NAVSUP Weapon Systems Support (Aviation)	Philadelphia, Pennsylvania

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NAVSUP Fleet Logistics Center	San Diego, California
NAVSUP Fleet Logistics Center	Jacksonville, Florida
NAVSUP Fleet Logistics Center	Norfolk, Virginia
NAVSUP Fleet Logistics Center	Pearl Harbor, Hawaii
NAVSUP Fleet Logistics Center	Puget Sound, Washington
NAVSUP Fleet Logistics Center	Yokosuka, Japan
NAVSUP Fleet Logistics Center	Sigonella, Italy
NAVSUP Fleet Logistics Center	Manama, Bahrain
NAVSUP Business Systems Center	Mechanicsburg, Pennsylvania

Significant Changes Since the FY 2019 President's Budget (PB-19):
Changes in anticipated customer demand is a key component to NAVSUP's budget. The contract authority requested in this budget submission is closely aligned to a future demand signal from customers and placed on contract an acquisition lead-time in advance of the warfighter requirement. In general, NAVSUP uses a lead-time of one year for maritime material delivery and two years for aviation.

The FY 2020 President's Budget (PB-20) Submission for NAVSUP provides a revised requirements profile for FY 2018 and FY 2019 based on actual execution and forecasted changes in customer demand as well as FY 2020 requirements. This profile continues to enable support of life-cycle extensions for legacy systems/platforms and new systems/platforms, maintaining a significant level of support required in the wholesale budget. Requirements are planned on a schedule to meet enterprise, service, and defense-wide mission objectives supporting operational commanders.

One significant change included in this budget in support of mission objectives is the Navy's Rhino Readiness Recovery plan. NAVSUP's budget reflects a targeted investment in Super Hornet supply support in anticipation of increased component demands directly associated with an acceleration of transition from Legacy to Super Hornet aircraft in the Fleet. Supply investments and improved maintenance support for these platforms is intended to directly increase the available Mission Capable (MC) aircraft and meet increased MC/Fully Mission Capable (FMC) objectives, as directed by the CNO.

Cost Reductions:
There were moderate cost reductions in FY 2018 and FY 2019 since PB-19. Wholesale aviation FY 2018 contract negotiations with vendors resulted in costs reductions of $207.6 million in contract cost avoidances.

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Logistics Reassignment / Consumable Item Transfer:
Logistics Reassignment (LR) occurs when NAVSUP transfers management of design-stable consumable material from within DON to Defense Logistics Agency (DLA). When executed DLA reimburses services for the value of inventory due-in from procurement at the time of each LR transfer out. NAVSUP collected $28.6 million in FY 2018. FY2019 and FY 2020 projected reimbursements are $48.4 million and $3.8 million, respectively.

Financial Profile:

Revenue/Expense/Operating Results ($Millions):	FY 2018	FY 2019	FY 2020
Net Revenue	$7,184.3	$7,711.5	$7,909.0
Expense	$7,040.0	$7,896.3	$7,929.4
Operating Results	$144.2	($184.8)	($20.5)
Less Capital Surcharge	$0.3	$1.8	$1.2
Net Operating Results (NOR)	$144.0	($186.6)	($21.7)
Prior Year AOR	$64.3	$208.2	$21.7
Other Changes Affecting AOR	$0.0	$0.0	$0.0
Accumulated Operating Results (AOR)	$208.2	$21.7	$0.0

Note: Amounts may not add due to rounding

Revenue and Expense: Revenue is directly tied to Net Sales from wholesale and retail material. Revenue from operations (BP91) includes direct reimbursable income and Capital Investment Program (CIP) costs. For material business lines, wholesale and retail expenses do not represent required budgetary resources (obligations). Material expense is the cost of material sold from inventory, which removes cost recovery rates and credits paid to customers from gross sales.

FY 2018 and FY 2019 revenue decreases are attributed to lower than anticipated wholesale customer demands. In addition, increased credits to Air Force V-22 customers are contributing to net revenue reductions. Expense reductions are commensurate with sales.

FY 2020 revenue increases from FY 2019 due to anticipated aviation customer requisitions for special program material deliveries. Another major contributor is an outfitting sales growth expected from both requirements and funding level increases reflected in FY 2020.

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SUPPLY MANAGEMENT - NAVY
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
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Obligation Authority ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Wholesale	$6,872.7	$6,912.0	$6,204.0
Retail	$858.3	$879.2	$895.4
Operating	$1,287.4	$1,422.6	$1,204.8
Capital Improvement Program (CIP)	$6.8	$8.3	$8.3
Total	$9,025.2	$9,222.1	$8,312.4

Note: Amounts may not add due to rounding

Wholesale: Procurement and repair of wholesale material constitutes the majority of NAVSUP's business. Wholesale material consists of repairable and consumables with lead-times averaging 12 to 24 months. Repairable material typically consists of critical weapon systems and propulsion plant secondary items managed by WSS. The current outline for wholesale obligations will support a mix of both new and legacy systems and platforms. Life-cycle extensions and further investment in Aviation Consolidated Allowance List (AVCAL) and Consolidated Shipboard Allowance List (COSAL) levels are included to support fleet and warfighter readiness. Examples of the platforms affected include: P-8A Poseidon, F/A-18 series, Gerald R. Ford Class carriers, Littoral Combat Ships (LCS), DDG-51 and DDG-1000 Class destroyers, C-2A Greyhounds, and Patrol Coastal and Mine Countermeasure ships. These combined efforts ultimately sustain O-FRP and the Navy's ability to provide the required capabilities to assigned missions and readiness.

FY 2019 has a total decrease of $339.4 million from the PB-19 budget. Decreases in requested wholesale contract authority is driven by changes in customer requirements. A significant driver is tied to on-going DON plans to divest in the F/A-18 Legacy Hornets.

NAVSUP continues to focus on holding sufficient levels of inventory in support of potential demand surges in the future and will continue to coordinate with fleet and maintenance community partners to support Secretary of Defense priorities through supply readiness. As part of the larger fill the shelves readiness efforts, NAVSUP is investing in increased wholesale inventory levels to better align the NWCF-SM budget with DoD priorities. This level of support continues into FY 2019 and FY 2020 budget estimates.

Retail: There are no significant changes in forecasted obligations between FY 2019 and FY 2020.

Operating: The $52.1 million increase from FY 2018 to FY 2019 is a result of price growth, additional civilian personnel for projected workload associated with supply support services at

WSS, FLC, and BSC, and an increase in costs of DLA services. The FY 2019 to FY 2020 decreases of $211.0 million is due primarily to NAVSUP Reimbursable Work Order (RWO) Reform (-$242.7 million). NAVSUP will remove internal RWOs that use O&M to reimburse FLC's and BSC for support. Instead, these funds will be executed directly by O&M activities. This change is partially offset by modest price growth and workload increases.

Collections/Disbursements/Outlays ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Collections	$7,185.9	$7,729.5	$7,907.6
Disbursements	$6,866.3	$8,194.3	$8,737.4
Transfers (CIT Reimbursement)	$28.6	$48.4	$3.8
Transfers (Navy Cash Realignment)	$0.0	$0.0	$0.0
Outlays (Incorporates Transfers)	($348.2)	$416.4	$826.0

Note: Amounts may not add due to rounding.

Collections/Disbursements: As a primary consideration of this budget, NAVSUP has carefully balanced cash, impacts of potential changes to customer rates, and customer support effectiveness. This balance includes recognition of proven financial lead-times between obligations and disbursements, ensuring cash solvency. Current net outlay projections reflect changes in workload and updated operating estimates.

Sales:

Gross Sales ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Wholesale	$6,295.2	$6,799.2	$7,232.0
Retail	$854.6	$878.5	$894.6
Total	$7,149.8	$7,677.7	$8,126.7

Note: Amounts may not add due to rounding

Wholesale: Gross sales are directly linked to customer demands and funding profiles, as well as WSS's ability to fill orders utilizing in-stock material when the forecasted demand is received. The overall wholesale demand profile will extend into FY 2019 with a slight reduction from the PB-19 budget. FY 2020 gross sales increase from FY 2019 for reasons described in the Revenue section above.

Retail: Retail sales remain consistent with the PB-19 submission.

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Metrics: Metrics provide information on the scope of work performed by NWCF-SM. Adjustments have been made to align future metrics with current obligations and sales projections.

	FY 2018	FY 2019	FY 2020
Items Managed	419,938	418,917	419,463
Requisitions Received	431,130	553,343	564,277
Receipts	529,986	550,614	632,484
Issues	888,399	942,691	1,007,756
Contracts Executed	27,486	31,487	31,559

Items managed increase due to maritime population growth. Requisitions Received and Issues have been increased to align with Gross Sales. And lastly, Material Receipts have increased due to corresponding obligation increases.

Undelivered Orders (UDOs) ($Millions): This represents contractual orders for goods in which a liability has not accrued. The liability is reported to the NWCF-SM account until the material delivers from a vendor. The accrual of liability creates an outlay requirement which has been accounted for in NWCF-SM cash projections. The delivery of material creates the liability and the related disbursement from NWCF-SM cash account. UDOs are decreasing due to prior year obligation reductions. Long lead-time items continue to contribute to a higher level of UDOs.

	FY 2018	FY 2019	FY 2020
Undelivered Orders ($Millions):	$9,702.9	$10,730.7	$10,305.7

War Reserve Material (WRM): War Reserve funding supports the procurement, replenishment, reconstitution, stock, and contracted asset availability guarantee of consumable and repairable items deemed necessary for war reserve. No obligation authority is anticipated during this budget cycle.

Performance Indicators: Performance indicators establish the expected level of performance for supply management. A Casualty Report (CASREP C-3/4) is a requisition for emergency requirements for weapons, equipment or material for immediate use. The system with a CASREP C-3/4 is unable to perform assigned primary operation missions without this material. The requested material is required to eliminate the work stoppage or anticipated work stoppage.

In FY 2018, there was a noted increase in Ship Operating Time and C3 and C4 CASREPs. All CASREP's for Navigation, Damage Control Equipment, Propulsion and Steering Control are now reported as C3/4 CASREPs. These items were previously not been included in C3/4 CASREP

reporting prior to FY 2018. As a result these performance indicators are being reviewed for future adjustment.

	FY 2018	FY 2019	FY 2020
Customer Wait Time (CWT) in days	14	16	16
Ship Operating Percentage of Time Free (POTF) of C3/C4 CASREP			
Deployed	35%	25%	25%
Non-deployed	48%	28%	28%
Aircraft Non Mission Capable Supply			
Deployed	10%	10%	10%
Non-Deployed	19%	10%	10%
Supply Material Availability	82%	85%	85%

Unit Cost: The cost per unit sold is ratio of total obligated cost and total gross sales. There were FY 2018 (actual) and FY 2019 (budgeted) wholesale unit cost decreases due to the reductions in actual and budgeted obligations for these fiscal years.

Unit Cost	FY 2018	FY 2019	FY 2020
Wholesale	$ 1.291	$ 1.221	$ 1.055
Retail	$ 1.004	$ 1.001	$ 1.001

Composite Rates	FY 2018	FY 2019	FY 2020
Annual Price Change (APC)	-0.005%	-0.337%	2.059%
Composite Cost Recovery Rate (CRR)	17.420%	10.878%	16.177%

Staffing:

Civilian/Military End Strength & Workyears:	FY 2018	FY 2019	FY 2020
Civilian End Strength	6,912	7,197	5,303
Civilian Workyears	6,789	7,192	5,297
Military End Strength	364	364	364
Military Workyears	364	364	364

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Civilian Personnel: Civilian workyear increases from FY 2018 to FY 2019 (+93) reflect anticipated workload demand. FY2019 through FY2020 workyear decreases are due to NAVSUP Reimbursable Work Order (RWO) Reform. NAVSUP has removed internal RWO funding arrangements at the FLC's and BSC. These FTE are now being funded in the OMN appropriation.

Military Personnel: No change.

Capital Investment Program (CIP): The Capital Investment Program sustains NAVSUP in mission achievement by reinvesting in plant equipment, cranes, and facilities. Assets included in the capital budget are listed below.

CIP Authority ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Equipment, Non-ADPE* / Telecom	$3.1	$3.5	$3.5
Equipment, ADPE / Telecom	$3.7	$3.8	$3.8
Software Development	$0.0	$0.0	$0.0
Minor Construction	$0.0	$1.0	$1.0
Total	$6.8	$8.3	$8.3

*Automatic Data Processing Equipment (ADPE)
Note: Amounts may not add due to rounding.

REVENUE AND EXPENSES
DEPARTMENT OF THE NAVY
SUPPLY MANAGEMENT - NAVY
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	FY 2018	FY 2019	FY 2020
Revenue:			
Gross Sales			
Operations	7,143.0	7,669.4	8,118.4
Capital Surcharges	0.3	1.8	1.2
Capital Investment Recovery except Maj Const	6.5	6.5	7.1
Total Gross Sales	7,149.8	7,677.7	8,126.7
Major Construction Dep	0.0	0.0	0.0
Other Income	412.3	457.0	186.9
Refunds/Discounts (- Credit Sales)	-377.9	-423.2	-404.6
Total Income	7,184.3	7,711.5	7,909.0
Expenses:			
Cost of Materiel Sold from Inventory	5,746.1	6,467.2	6,717.6
Salaries and Wages:			
Military Personnel Compensation & Benefits	31.7	32.3	32.8
Civilian Personnel Compensation & Benefits	609.0	657.0	472.8
Travel and Transportation of Personnel	13.1	13.1	8.4
Material & Supplies (Internal Operations)	13.3	26.5	20.0
Equipment	20.1	23.7	23.0
Other Purchases from NWCF	209.7	222.7	232.8
Transportation of Things	110.0	142.0	133.2
Capital Investment Recovery	6.5	6.5	7.1
Printing and Reproduction	1.2	4.5	4.5
Advisory and Assistance Services	83.4	66.4	67.8
Rent, Communication, Utilities & Misc Charges	90.9	83.9	73.4
Other Purchased Services	105.1	150.5	136.3
Total Expenses	7,040.0	7,896.3	7,929.4
Operating Result	144.2	-184.8	-20.5
Less Capital Surcharge reservation	0.3	1.8	1.2
Plus Appro Affecting NOR/AOR	0.0	0.0	0.0
Plus Other Changes Affecting NOR	0.0	0.0	0.0
Net Operating Result	143.9	-186.6	-21.7
Prior Year AOR	64.3	208.2	21.7
Other Changes Affecting AOR	0.0	0.0	0.0
Accumulated Operating Result	208.2	21.7	0.0
Non-Recoverable Adjustments impacting AOR	0.0	0.0	0.0
AOR for budget purposes	208.2	21.7	0.0

SOURCES OF NEW ORDERS & REVENUE
DEPARTMENT OF THE NAVY
SUPPLY MANAGEMENT - NAVY
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	FY 2018	FY 2019	FY 2020
1. New Orders	0.0	0.0	0.0
a. Orders from DoD Components:	0.0	0.0	0.0
Department of the Navy	0.0	0.0	0.0
O & M, Navy	5,754.8	5,579.2	6,161.9
O & M, Marine Corps	2.7	2.6	2.9
O & M, Navy Reserve	93.7	90.9	100.4
O & M, Marine Corp Reserve	0.0	0.0	0.0
Reserve Personnel, Navy	0.0	0.0	0.0
Military Personnel, Navy	0.0	0.0	0.0
Military Personnel, Marine Corp	0.0	0.0	0.0
Aircraft Procurement, Navy	826.4	830.5	944.9
Weapons Procurement, Navy	3.5	14.2	7.6
Shipbuilding & Conversion, Navy	37.7	30.8	30.8
Other Procurement, Navy	55.4	72.4	66.5
Procurement, Marine Corps	0.0	0.0	0.0
Research, Dev., Test, & Eval., Navy	0.9	0.9	1.0
National Defense Sealift Fund	0.0	0.0	0.0
Other Navy Appropriations	0.0	0.0	0.0
Other Marine Corps Appropriations	0.0	0.0	0.0
Navy Working Capital Fund	201.5	195.4	215.8
Orders from Other DoD Components			
Department of the Army	3.3	3.3	3.6
Department of the Air Force	256.6	250.7	277.0
DoD Other	39.4	38.5	42.6
b. Orders from other Fund Activity Groups	0.0	0.0	0.0
Distribution Depots, Navy	0.0	0.0	0.0
Logistics Support, Navy	0.0	0.0	0.0
c. Total DoD	0.0	0.0	0.0
d. Other Orders:	0.0	0.0	0.0
Other Federal Agencies	17.2	16.8	18.6
Trust Fund			
Foreign Military Sales	135.4	132.3	146.2
Non Federal Agencies*	131.8	135.8	139.6
Total New Orders	7,560.5	7,394.3	8,159.4
2. Carry-In Orders	1,467.1	1,877.8	1,594.5
3. Total Gross Orders	9,027.6	9,272.2	9,753.9
4. Carry-Out Orders	1,877.8	1,594.5	1,627.2
5. Gross Sales	7,149.8	7,677.7	8,126.7
Reimbursable Orders (BP 91)	412.3	457.0	186.9
6. Credit (-)	377.9	423.2	404.6
7. Net Sales	7,184.3	7,711.5	7,909.0

* Non-federal agencies line includes cash sales

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CAPITAL INVESTMENT SUMMARY
DEPARTMENT OF THE NAVY
SUPPLY MANAGEMENT - NAVY
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

(DOLLARS IN MILLIONS)

		FY 2018		FY 2019		FY 2020	
Line #	Description	Quantity	Total Cost	Quantity	Total Cost	Quantity	Total Cost
1	**Non-ADPE and Telecom Equipment >= $.250M**	**0**	**$3.144**	**0**	**$3.500**	**0**	**$3.500**
	- Vehicles	0	$0.207	0	$0.500	0	$0.500
	- Material Handling	0	$2.497	0	$2.500	0	$2.500
	- Installation Security	0	$0.000	0	$0.000	0	$0.000
	- Quality Control/Testing	0	$0.000	0	$0.000	0	$0.000
	- Medical Equipment	0	$0.000	0	$0.000	0	$0.000
	- Machinery	0	$0.440	0	$0.500	0	$0.500
	- Support Equipment	0	$0.000	0	$0.000	0	$0.000
2	**ADPE and Telecom Equipment >= $.250M**	**0**	**$3.670**	**0**	**$3.750**	**0**	**$3.750**
	- Computer Hardware (Production)	0	$3.670	0	$3.750	0	$3.750
	- Computer Hardware (Network)	0	$0.000	0	$0.000	0	$0.000
	- Computer Software (Operating)	0	$0.000	0	$0.000	0	$0.000
	- Telecommunications	0	$0.000	0	$0.000	0	$0.000
	- Other Support Equipment	0	$0.000	0	$0.000	0	$0.000
3	**Software Development >= $.250M**	**0**	**$0.000**	**0**	**$0.000**	**0**	**$0.000**
	- Internally Developed	0	$0.000	0	$0.000	0	$0.000
	- Externally Developed	0	$0.000	0	$0.000	0	$0.000
4	**Minor Construction (>= $.250M and <= $1.000M)**	**0**	**$0.010**	**0**	**$1.000**	**0**	**$1.000**
	- Replacement Capability	0	$0.010	0	$1.000	0	$1.000
	- New Construction	0	$0.000	0	$0.000	0	$0.000
	- Environmental Capability	0	$0.000	0	$0.000	0	$0.000
	Grand Total	**0**	**$6.824**	**0**	**$8.250**	**0**	**$8.250**
	Total Capital Outlays		**$8.226**		**$6.000**		**$6.500**
	Total Capital Investment Recovery		**$6.527**		**$6.472**		**$7.060**

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Department of the Navy/ Supply	#001 - Non-ADPE						Supply Management - Navy		
	FY 2018			FY 2019			FY 2020		
Non-ADP Equipment	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Vehicles	0	-	$207	0	-	$500	0	-	$500
Material Handling	0	-	$2,497	0	-	$2,500	0	-	$2,500
Installation Security	0	-	$0	0	-	$0	0	-	$0
Quality Control/ Testing	0	-	$0	0	-	$0	0	-	$0
Medical Equipment	0	-	$0	0	-	$0	0	-	$0
Machinery	0	-	$440	0	-	$500	0	-	$500
Support Equipment	0	-	$0	0	-	$0	0	-	$0
Total	0	-	$3,144	0	-	$3,500	0	-	$3,500

Justification:

This program funds the procurement of new/initial outfitting and replacement of Material Handling Equipment (MHE) and Automated Material Handling Systems (AMHS) to satisfy operational requirements within the Navy Supply System. Replacement MHE is for over aged non-repairable equipment used in material handling operations at various activities. With a large inventory of equipment at the various Fleet Logistics Centers (FLCs) there will always be units eligible for replacement through procurement. If fully supported, this funding will allow the Navy to develop the right mix of new procurements, resulting in overall requirement reductions, and resolving the problem of trying to maintain old equipment at high maintenance cost and reduced state of readiness. MHE funding limitations in past years has precluded the purchase of required MHE planned for issue. We can not emphasize enough that this is a continuing program and one year builds on the next. Delaying any funding only postpones the inevitable requirement to procure a new unit at a higher cost. Supply readiness and logistical support are dependent upon the availability of reliable MHE. Non-repairable equipment is not cost effective to maintain for continued operation, and repair parts are difficult to obtain. Replacement of non-repairable equipment with new and more efficient models will reduce excessive costs attributed to repair/overhaul, downtime and maintenance. New equipment will enhance productivity and enable users to meet handling and logistics requirements in an efficient and effective manner. For these reasons it is essential to maintain funding to cover procurement of new equipment as required.
Naval Supply Systems Command (NAVSUP) is also responsible for replacing and maintaining aging Civil Engineering Support Equipment (CESE) necessary for fuel depot operations throughout the Navy. This equipment is necessary to maintain and improve the working conditions and assist NAVSUP operations employees. Safety, reliability, maintenance cost and customer support are directly impacted by age and condition of this equipment. Economic analysis is not provided since equipment is only replaced as useful life has been exceeded due to age and or usage. Dollar values are established by NAVFAC procuring activity in Port Hueneme, CA. Examples: Tanker truck, 20 ton semi trailer stake 2 axle, 20 ton semi trailer van 2 axle.

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Department of the Navy/ Supply	#002 - ADPE						Supply Management - Navy		
	FY 2018			FY 2019			FY 2020		
ADP Equipment	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Computer Hardware (Production)	0	-	$3,670	0	-	$3,750	0	-	$3,750
Computer Hardware (Network)	0	-	$0	0	-	$0	0	-	$0
Computer Software (Operating Sy	0	-	$0	0	-	$0	0	-	$0
Telecommunications	0	-	$0	0	-	$0	0	-	$0
Other Support Equipment	0	-	$0	0	-	$0	0	-	$0

Justification:

NAVSUP Business Systems Center (BSC) - Funds provide support to the BSC Legacy/Non-Navy/Marine Corps Intranet (NMCI) Network Plan. As part of the plan, NAVSUP BSC is upgrading its NETWARCOM approved legacy network, which will replace obsolete non-NMCI ADP equipment to provide an environment for client/server development. A variety of PC hardware platforms currently exists in NAVSUP BSC that prevents deployment of the development tools needed to maintain its competitiveness. Upgrading and standardizing hardware infrastructure will allow NAVSUP BSC to use the network to deploy the latest legacy/non-NMCI software products. As NAVSUP moves forward with reducing system and Information Technology (IT) costs and improving business processes, a critical area identified for analysis is Allowancing. In order to optimize the allowance systems and align with key Enterprise efforts such as Navy ERP and Single Supply Baseline (SSB), NAVSUP continues to streamline current Readiness Suite and Re-Engineering Maritime Allowance Development (ReMAD) systems via merging the associated databases, standardizing data validations rules and leveraging synergies resulting from combining the platforms. This effort will position NAVSUP to respond to future Enterprise integration/transition requirements.

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Department of the Navy/ Supply	#003 - Software Development						Supply Management - Navy		
	FY 2017			FY 2018			FY 2019		
Software	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Internally Developed	0	-	$0	0	-	$0	0	-	$0
Externally Developed	0	-	$0	0	-	$0	0	-	$0
Total	0	-	$0	0	-	$0	0	-	$0

Justification:

CAPITAL INVESTMENT JUSTIFICATION				FISCAL YEAR (FY) 2020 BUDGET ESTIMATES					
(DOLLARS IN THOUSANDS)				MARCH 2019					
Department of the Navy/ Supply	#004 - Minor Construction						Supply Management - Navy		
	FY 2018			FY 2019			FY 2020		
Minor Construction	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost	Quant	Unit Cost	Total Cost
Replacement	0	-	$10	0	-	$1,000	0	-	$1,000
New Construction	0	-	$0	0	-	$0	0	-	$0
Environmental Capability	0	-	$0	0	-	$0	0	-	$0
Total	0	-	$10	0	-	$1,000	0	-	$1,000

Justification:

Minor Construction: At year end miscommunication with NAVFAC resulted in loss of FY18 Project funds. The project will be funded with FY19 funds and push future projects out.

NAVSUP, as the maintenance UIC for all facilities occupied and operated by NAVSUP employees, is responsible for Real Property Maintenance (Minor Construction portion) of facilities occupied and operated. These NWCF Supply Management projects are necessary to maintain and improve the working conditions for NAVSUP employees. Projects include Minor Construction requirements of facilities as well as Quality of Life and correction of Safety deficiencies. Minor Construction funding requested supports the overall RPM objectives of the NAVFAC recommended spending limits of between 2% to 4% annually based on the associated property values. Economic analysis are not performed since Minor Construction funding limits keep investment percentage to such a small percentage of the total facility value. Cost savings if identified are provided as part of the project documentation developed. No minor construction project exceeds the current MILCON threshold.

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CAPITAL BUDGET EXECUTION
DEPARTMENT OF THE NAVY
SUPPLY MANAGEMENT - NAVY
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

FY	Line Item	Category	Capability/Project	Initial Request	Current Proj Cost	Approved Change	Explanation
2018	**1**	**Non ADP**		**$3.144**	**$3.300**	**$0.156**	
			Vehicles	$0.207	$0.300	$0.093	Actual Execution
			Material Handling	$2.497	$2.500	$0.003	Actual Execution
			Quality Control/Testing	$0.000	$0.000	$0.000	
			Machinery	$0.440	$0.500	$0.060	Actual Execution
			Support Equipment	$0.000	$0.000	$0.000	
	2	**ADP**		**$3.670**	**$4.100**	**$0.430**	
			Computer Hardware (Production)	$3.670	$4.100	$0.430	Actual Execution
			Computer Hardware (Network)	$0.000	$0.000	$0.000	
			Computer Software (Operating)	$0.000	$0.000	$0.000	
			Telecommunications	$0.000	$0.000	$0.000	
			Other Support Equipment	$0.000	$0.000	$0.000	
	3	**Software**		**$0.000**	**$0.000**	**$0.000**	
			Internally Developed	$0.000	$0.000	$0.000	
			Externally Developed	$0.000	$0.000	$0.000	
	4	**Minor Construction**		**$0.010**	**$0.800**	**$0.790**	
			Replacement	$0.010	$0.800	$0.790	NAVFAC miscommunication on project
			New Construction	$0.000	$0.000	$0.000	
			Environmental Capability	$0.000	$0.000	$0.000	
TOTAL FY 2018 CIP Program				**$6.824**	**$8.200**	**$1.376**	

FY	L.I.	Category	Capability/Project	I.R	C.P.R	A.C.	Explanation
2019	**1**	**Non ADP**		**$3.500**	**$3.500**	**$0.000**	
			Vehicles	$0.500	$0.500	$0.000	
			Material Handling	$2.500	$2.500	$0.000	
			Quality Control/Testing	$0.000	$0.000	$0.000	
			Machinery	$0.500	$0.500	$0.000	
			Support Equipment	$0.000	$0.000	$0.000	
	2	**ADP**		**$3.750**	**$3.750**	**$0.000**	
			Computer Hardware (Production)	$3.750	$3.750	$0.000	
			Computer Hardware (Network)	$0.000	$0.000	$0.000	
			Computer Software (Operating)	$0.000	$0.000	$0.000	
			Telecommunications	$0.000	$0.000	$0.000	
			Other Support Equipment	$0.000	$0.000	$0.000	
	3	**Software**		**$0.000**	**$0.000**	**$0.000**	
			Internally Developed	$0.000	$0.000	$0.000	
			Externally Developed	$0.000	$0.000	$0.000	
	4	**Minor Construction**		**$1.000**	**$1.000**	**$0.000**	
			Replacement	$1.000	$1.000	$0.000	
			New Construction	$0.000	$0.000	$0.000	
			Environmental Capability	$0.000	$0.000	$0.000	
TOTAL FY 2019 CIP Program				**$8.250**	**$8.250**	**$0.000**	

FY	L.I.	Category	Capability/Project	I.R	C.P.R	A.C.	Explanation
2020	**1**	**Non ADP**		**$3.500**	**$3.500**	**$0.000**	
			Vehicles	$0.500	$0.500	$0.000	
			Material Handling	$2.500	$2.500	$0.000	
			Quality Control/Testing	$0.000	$0.000	$0.000	
			Machinery	$0.500	$0.500	$0.000	
			Support Equipment	$0.000	$0.000	$0.000	
	2	**ADP**		**$3.750**	**$3.750**	**$0.000**	
			Computer Hardware (Production)	$3.750	$3.750	$0.000	
			Computer Hardware (Network)	$0.000	$0.000	$0.000	
			Computer Software (Operating)	$0.000	$0.000	$0.000	
			Telecommunications	$0.000	$0.000	$0.000	
			Other Support Equipment	$0.000	$0.000	$0.000	
	3	**Software**		**$0.000**	**$0.000**	**$0.000**	
			Internally Developed	$0.000	$0.000	$0.000	
			Externally Developed	$0.000	$0.000	$0.000	
	4	**Minor Construction**		**$1.000**	**$1.000**	**$0.000**	
			Replacement	$1.000	$1.000	$0.000	
			New Construction	$0.000	$0.000	$0.000	
			Environmental Capability	$0.000	$0.000	$0.000	
TOTAL FY 2020 CIP Program				**$8.250**	**$8.250**	**$0.000**	

SUPPLY MANAGEMENT SUMMARY

DEPARTMENT OF THE NAVY

SUPPLY MANAGEMENT - NAVY

FISCAL YEAR (FY) 2020 BUDGET ESTIMATES

MARCH 2019

(DOLLARS IN MILLIONS)

DIVISION	PEACETIME INVENTORY	NET CUSTOMER ORDERS	NET SALES	OPERATING	MOBILIZATION	TOTAL OBLIGATIONS	VARIABILITY TARGET	TARGET TOTAL	CAPITAL IMRPROVEMENT PROGRAM	CREDIT SALES
BP21										
FY18	13.1	59.4	59.4	56.7	0.0	56.7	0.0	56.7	0.0	0.0
FY19	14.5	66.3	66.3	67.0	0.0	67.0	0.0	67.0	0.0	0.0
FY20	14.5	66.3	66.3	67.0	0.0	67.0	0.0	67.0	0.0	0.0
BP25										
FY18	0.0	0.0	0.0	0.8	0.0	0.8	0.0	0.8	0.0	0.0
BP28										
FY18	2,440.7	795.2	795.2	800.8	0.0	800.8	0.0	800.8	0.0	0.0
FY19	2,628.2	812.2	812.2	812.2	0.0	812.2	0.0	812.2	0.0	0.0
FY20	2,892.7	828.4	828.4	828.4	0.0	828.4	0.0	828.4	0.0	0.0
BP34										
FY18	261.9	188.9	194.7	52.6	0.0	52.6	0.0	52.6	0.0	0.1
FY19	213.3	165.8	167.2	75.3	0.0	75.3	13.0	88.3	0.0	0.2
FY20	199.2	157.6	158.2	54.6	0.0	54.6	13.0	67.6	0.0	0.2
BP81										
FY18	11,409.5	1,258.8	1,205.6	1,505.4	0.0	1,505.4	0.0	1,505.4	0.0	5.7
FY19	11,074.9	1,253.3	1,278.3	1,200.8	0.0	1,200.8	176.0	1,376.8	0.0	10.0
FY20	10,626.4	1,341.4	1,349.3	1,183.4	0.0	1,183.4	176.0	1,359.4	0.0	10.0
BP85										
FY18	48,605.6	4,880.4	4,517.1	5,314.7	0.0	5,314.7	0.0	5,314.7	0.0	372.1
FY19	49,656.8	4,673.4	4,930.5	5,635.9	0.0	5,635.9	636.0	6,271.9	0.0	413.0
FY20	51,349.6	5,360.9	5,319.9	4,966.0	0.0	4,966.0	636.0	5,602.0	0.0	394.5
BP91										
FY18	0.0	0.0	412.3	1,287.4	0.0	1,287.4	0.0	1,287.4	6.8	0.0
FY19	0.0	0.0	457.0	1,422.6	0.0	1,422.6	0.0	1,422.6	8.3	0.0
FY20	0.0	0.0	186.9	1,204.8	0.0	1,204.8	0.0	1,204.8	8.3	0.0
TOTAL										
FY18	62,730.9	7,182.6	7,184.3	9,018.4	0.0	9,018.4	0.0	9,018.4	6.8	377.9
FY19	63,587.7	6,971.0	7,711.5	9,213.8	0.0	9,213.8	825.0	10,038.8	8.3	423.2
FY20	65,082.3	7,754.6	7,909.0	8,304.2	0.0	8,304.2	825.0	9,129.2	8.3	404.6

OPERATING REQUIREMENTS BY WEAPON SYSTEM
DEPARTMENT OF THE NAVY
SUPPLY MANAGEMENT - NAVY
BP 81
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)
FY 2018

Weapon System Name	Basic Replen	Outfitting	Special Programs	Repair	Total
AMPHIBIOUS	7.6	1.1	1.4	1.4	11.5
NUCLEAR	95.0	12.1	0.0	2.9	110.0
SUBSAFE LI/ASDS/DSSP	33.5	0.8	33.9	13.3	81.5
EXPEDITIONARY	(3.8)	0.0	2.2	4.5	2.9
COMMON ELECTRONIC	73.3	22.2	83.8	71.0	250.3
COMMON HM&E	208.3	17.5	93.9	58.3	377.9
CRUDES	89.7	12.8	50.7	162.9	316.0
LITTORAL	17.9	11.1	18.8	7.0	54.9
SUBMARINE	78.4	1.7	73.1	98.3	251.5
CVN	11.2	0.2	22.4	15.0	48.8
Gross Requirement	611.1	79.6	380.1	434.5	1,505.4

Platform	FY18 POTF *
AIRCRAFT CARRIERS	59%
AMPHIBIOUS WARFARE	23%
COMBAT LOGISTICS SHIPS	N/A
MINE WARFARE SHIPS	12%
SUBMARINES (SSN)	97%
SUBMARINES (SSBN)	100%
SUBMARINES (SSGN)	91%
LITTORAL	25%
SURFACE COMBATANTS	25%
MISCELLANEOUS	55%
ACROSS ALL PLATFORMS	28%

* POTF (Percentage of Time Free) is an accepted Department of Defense readiness metric and is used in assessing ship and submarine readiness vice NMCS (aviation metric). It measures the percentage of operating time free of mission-degrading casualties for active ships in all fleets (i.e. the percentage of operating time that a platform has no C3/C4 casualty reports (CASREPs). POTF is measured by platform. There is no means of obtaining POTF data at the Weapon System level.

FY18 POTF is based on 4th Quarter Actuals.

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Weapon System Name	Basic Replen	Outfitting	Special Programs	Repair	Total
AMPHIBIOUS	4.1	1.1	1.2	4.9	11.3
NUCLEAR	68.8	12.1	0.0	4.3	85.2
SUBSAFE LI/ASDS/DSSP	19.0	0.0	30.8	23.1	72.9
EXPEDITIONARY	0.4	0.0	10.5	9.8	20.7
COMMON ELECTRONIC	46.0	25.0	62.4	161.7	295.2
COMMON HM&E	42.1	5.5	76.1	61.3	185.0
CRUDES	74.4	11.4	50.0	151.3	287.0
LITTORAL	7.5	8.4	11.0	7.6	34.6
SUBMARINE	62.4	2.0	41.4	61.0	166.8
CVN	7.9	1.4	24.2	8.5	42.0
Gross Requirement	332.8	66.9	307.7	493.5	1,200.8

Platform	FY19 POTF *
AIRCRAFT CARRIERS	59%
AMPHIBIOUS WARFARE	23%
COMBAT LOGISTICS SHIPS	N/A
MINE WARFARE SHIPS	12%
SUBMARINES (SSN)	97%
SUBMARINES (SSBN)	100%
SUBMARINES (SSGN)	91%
LITTORAL	25%
SURFACE COMBATANTS	25%
MISCELLANEOUS	55%
ACROSS ALL PLATFORMS	28%

* POTF (Percentage of Time Free) is an accepted Department of Defense readiness metric and is used in assessing ship and submarine readiness vice NMCS (aviation metric). It measures the percentage of operating time free of mission-degrading casualties for active ships in all fleets (i.e. the percentage of operating time that a platform has no C3/C4 casualty reports (CASREPs). POTF is measured by platform. There is no means of obtaining POTF data at the Weapon System level.

FY19 POTF is based on 4th Quarter Actuals from FY18.

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Weapon System Name	Basic Replen	Outfitting	Special Programs	Repair	Total
AMPHIBIOUS	4.3	0.8	1.1	5.8	11.9
NUCLEAR	69.5	11.4	0.0	4.3	85.2
SUBSAFE LI/ASDS/DSSP	25.6	0.0	24.2	15.5	65.3
EXPEDITIONARY	1.3	0.0	11.0	2.8	15.1
COMMON ELECTRONIC	44.3	16.2	63.0	142.2	265.7
COMMON HM&E	40.5	6.5	66.5	93.2	206.7
CRUDES	101.4	7.4	18.7	156.9	284.4
LITTORAL	2.6	13.3	9.0	13.6	38.5
SUBMARINE	60.4	1.7	35.7	69.8	167.6
CVN	8.1	0.4	22.5	11.8	42.9
Gross Requirement	358.0	57.7	251.7	516.0	1,183.4

Platform	FY20 POTF *
AIRCRAFT CARRIERS	59%
AMPHIBIOUS WARFARE	23%
COMBAT LOGISTICS SHIPS	N/A
MINE WARFARE SHIPS	12%
SUBMARINES (SSN)	97%
SUBMARINES (SSBN)	100%
SUBMARINES (SSGN)	91%
LITTORAL	25%
SURFACE COMBATANTS	25%
MISCELLANEOUS	55%
ACROSS ALL PLATFORMS	28%

* POTF (Percentage of Time Free) is an accepted Department of Defense readiness metric and is used in assessing ship and submarine readiness vice NMCS (aviation metric). It measures the percentage of operating time free of mission-degrading casualties for active ships in all fleets (i.e. the percentage of operating time that a platform has no C3/C4 casualty reports (CASREPs). POTF is measured by platform. There is no means of obtaining POTF data at the Weapon System level.

FY20 POTF is based on 4th Quarter Actuals from FY18.

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Weapon System	NMCS Rates[1]	Buy-in Outfitting	Special Programs	Basic Replen	Total
F/A-18 / EA-18G	14.9 / 16.7	1.6	0.0	12.1	13.7
AV-8B / T-45	6.3 / 16.6	0.0	0.0	0.8	0.8
E-2 / C-2	22.2 / 11.4	1.3	0.0	1.0	2.3
EA-6B	3.8	0.0	0.0	0.0	0.0
RQ-21 UASI	n/a	0.0	0.0	0.0	0.0
V-22	11.5	3.5	0.0	2.3	5.9
C-130	7.4	0.1	0.0	0.0	0.2
P-3	19.5	0.0	0.0	0.2	0.2
P-8	14.6	0.9	0.0	1.0	2.0
H-1	8.3	0.8	0.0	0.4	1.2
H-53	16.6	0.0	0.0	0.1	0.1
H-60	15.5	2.3	0.0	1.9	4.3
VTUAV	n/a	0.2	0.0	0.1	0.4
Common Systems	n/a	0.6	0.0	11.5	12.1
Aircraft Engines	n/a	0.0	0.0	6.1	6.1
Aviation Support Systems	n/a	0.0	0.0	3.5	3.5
Total		11.5	0.0	41.2	52.6

[1]Not Mission Capable Supply (NMCS) - Percentage of time aircraft are Not Mission Capable due to a supply shortage. Used in conjunction with Not Mission Capable Maintenance (NMCM) to determine total Not Mission Capable rate (inverse of MC). NMCS is computed only for weapon systems. NMCS is not computed for weapon system parts, such as engines. Data Source: NAVAIR Deckplate (Moving Average Status reflecting FY18 Qtr4 data). Provided by: OPNAV-N43

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Weapon System	NMCS Rates[1]	Buy-in Outfitting	Special Programs	Basic Replen	Total
F/A-18 / EA-18G	14.9 / 16.7	4.2	0.0	11.9	16.1
AV-8B / T-45	6.3 / 16.6	0.0	0.0	0.3	0.3
E-2 / C-2	22.2 / 11.4	1.3	0.0	0.3	1.6
EA-6B	3.8	0.0	0.0	0.0	0.0
RQ-21 UASI	n/a	0.0	0.0	0.0	0.0
V-22	11.5	3.6	0.0	6.1	9.6
C-130	7.4	0.1	0.0	0.1	0.2
P-3	19.5	0.0	0.0	0.6	0.6
P-8	14.6	3.0	0.0	2.0	5.0
H-1	8.3	0.6	0.0	0.8	1.4
H-53	16.6	0.3	0.0	1.7	2.0
H-60	15.5	1.9	0.0	2.4	4.3
VTUAV	n/a	1.0	0.0	1.0	2.0
Common Systems	n/a	8.1	0.0	12.7	20.7
Aircraft Engines	n/a	0.0	0.0	8.3	8.3
Aviation Support Systems	n/a	0.0	0.0	3.0	3.0
Total		24.0	0.0	51.2	75.3

[1]Not Mission Capable Supply (NMCS) - Percentage of time aircraft are Not Mission Capable due to a supply shortage. Used in conjunction with Not Mission Capable Maintenance (NMCM) to determine total Not Mission Capable rate (inverse of MC). NMCS is computed only for weapon systems. NMCS is not computed for weapon system parts, such as engines. Data Source: NAVAIR Deckplate (Moving Average Status reflecting FY18 Qtr4 data). Provided by: OPNAV-N43

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Weapon System	NMCS Rates[1]	Buy-in Outfitting	Special Programs	Basic Replen	Total
F/A-18 / EA-18G	14.9 / 16.7	1.2	0.0	13.2	14.4
AV-8B / T-45	6.3 / 16.6	0.0	0.0	0.4	0.4
E-2 / C-2	22.2 / 11.4	1.7	0.0	0.7	2.4
EA-6B	3.8	0.0	0.0	0.1	0.1
RQ-21 UASI	n/a	0.0	0.0	0.0	0.0
V-22	11.5	2.5	0.0	1.0	3.5
C-130	7.4	0.1	0.0	0.7	0.7
P-3	19.5	0.0	0.0	0.7	0.7
P-8	14.6	0.0	0.0	0.4	0.4
H-1	8.3	1.4	0.0	1.8	3.2
H-53	16.6	0.0	0.0	1.5	1.5
H-60	15.5	0.7	0.0	0.8	1.5
VTUAV	n/a	0.8	0.0	1.5	2.3
Common Systems	n/a	3.6	0.0	1.0	4.6
Aircraft Engines	n/a	0.0	0.0	4.4	4.4
Aviation Support Systems	n/a	0.0	0.0	14.5	14.5
Total		12.0	0.0	42.637	54.604

[1]Not Mission Capable Supply (NMCS) - Percentage of time aircraft are Not Mission Capable due to a supply shortage. Used in conjunction with Not Mission Capable Maintenance (NMCM) to determine total Not Mission Capable rate (inverse of MC). NMCS is computed only for weapon systems. NMCS is not computed for weapon system parts, such as engines. Data Source: NAVAIR Deckplate (Moving Average Status reflecting FY18 Qtr4 data). Provided by: OPNAV-N43

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Weapon System	NMCS Rates[1]	Buy-in Outfitting	Special Programs	Basic Replen	Repair	Total
F/A-18 / EA-18G	14.9 / 16.7	40.0	234.9	483.9	670.4	1,429.3
AV-8B / T-45	6.3 / 16.6	0.0	24.4	9.2	113.9	147.5
E-2 / C-2	22.2 / 11.4	48.4	0.0	240.3	124.2	412.9
EA-6B	3.8	0.0	0.0	8.1	16.6	24.7
RQ-21 UASI	n/a	0.0	0.0	0.0	0.0	0.0
V-22	11.5	62.5	0.0	267.2	381.4	711.1
C-130	7.4	25.9	0.0	16.0	23.7	65.5
P-3	19.5	0.7	0.0	1.5	45.8	48.0
P-8	14.6	37.1	0.0	69.8	66.1	173.0
H-1	8.3	29.6	0.0	86.0	178.0	293.6
H-53	16.6	0.0	2.4	26.0	311.5	340.0
H-60	15.5	62.7	0.0	86.0	302.8	451.6
VTUAV	n/a	6.7	0.0	4.8	2.6	14.1
Common Systems	n/a	13.6	0.0	143.1	131.0	287.7
Aircraft Engines	n/a	0.0	16.6	92.3	665.8	774.8
Aviation Support Systems	n/a	0.0	0.0	37.9	103.3	141.1
Total		327.2	278.4	1,572.1	3,137.1	5,314.7

[1]Not Mission Capable Supply (NMCS) - Percentage of time aircraft are Not Mission Capable due to a supply shortage. Used in conjunction with Not Mission Capable Maintenance (NMCM) to determine total Not Mission Capable rate (inverse of MC). NMCS is computed only for weapon systems. NMCS is not computed for weapon system parts, such as engines. Data Source: NAVAIR Deckplate (Moving Average Status reflecting FY18 Qtr4 data). Provided by: OPNAV-N43

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Weapon System	NMCS Rates[1]	Buy-in Outfitting	Special Programs	Basic Replen	Repair	Total
F/A-18 / EA-18G	14.9 / 16.7	155.0	680.5	219.3	651.5	1,706.4
AV-8B / T-45	6.3 / 16.6	0.0	0.0	26.9	110.1	137.0
E-2 / C-2	22.2 / 11.4	47.6	0.0	55.3	163.0	265.9
EA-6B	3.8	0.0	0.0	5.0	28.0	33.0
RQ-21 UASI	n/a	0.0	0.0	0.0	0.0	0.0
V-22	11.5	113.0	11.6	84.9	455.2	664.7
C-130	7.4	1.2	0.0	50.1	51.2	102.5
P-3	19.5	0.3	0.0	4.1	47.2	51.6
P-8	14.6	106.7	0.0	37.9	44.2	188.8
H-1	8.3	23.9	0.0	45.1	136.1	205.1
H-53	16.6	10.5	20.2	23.1	399.1	452.9
H-60	15.5	80.6	0.0	23.0	333.7	437.3
VTUAV	n/a	34.1	0.0	2.7	7.2	44.0
Common Systems	n/a	216.8	0.0	41.0	142.1	399.9
Aircraft Engines	n/a	0.0	78.8	19.9	702.1	800.7
Aviation Support Systems	n/a	0.0	0.0	13.6	132.5	146.1
Total		789.9	791.1	651.8	3,403.1	5,635.9

[1]Not Mission Capable Supply (NMCS) - Percentage of time aircraft are Not Mission Capable due to a supply shortage. Used in conjunction with Not Mission Capable Maintenance (NMCM) to determine total Not Mission Capable rate (inverse of MC). NMCS is computed only for weapon systems. NMCS is not computed for weapon system parts, such as engines. Data Source: NAVAIR Deckplate (Moving Average Status reflecting FY18 Qtr4 data). Provided by: OPNAV-N43

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Weapon System	NMCS Rates[1]	Buy-in Outfitting	Special Programs	Basic Replen	Repair	Total
F/A-18 / EA-18G	14.9 / 16.7	32.7	387.5	132.3	508.6	1,061.1
AV-8B / T-45	6.3 / 16.6	0.0	0.0	37.0	71.5	108.4
E-2 / C-2	22.2 / 11.4	45.8	0.0	75.2	140.1	261.1
EA-6B	3.8	0.0	0.0	5.1	29.2	34.3
RQ-21 UASI	n/a	0.0	0.0	0.0	0.0	0.0
V-22	11.5	67.0	18.8	185.8	528.6	800.1
C-130	7.4	1.6	0.0	44.1	47.8	93.5
P-3	19.5	0.4	0.0	2.5	57.4	60.3
P-8	14.6	0.0	0.0	21.9	52.5	74.3
H-1	8.3	37.0	0.0	69.5	152.0	258.5
H-53	16.6	0.0	0.0	22.2	458.2	480.4
H-60	15.5	20.0	0.0	73.9	420.5	514.4
VTUAV	n/a	23.0	0.0	3.9	6.5	33.4
Common Systems	n/a	98.1	0.0	19.3	130.7	248.2
Aircraft Engines	n/a	0.0	0.0	48.6	791.7	840.3
Aviation Support Systems	n/a	0.0	0.0	7.6	90.0	97.7
Total		325.6	406.3	748.9	3,485.1	4,966.0

[1]Not Mission Capable Supply (NMCS) - Percentage of time aircraft are Not Mission Capable due to a supply shortage. Used in conjunction with Not Mission Capable Maintenance (NMCM) to determine total Not Mission Capable rate (inverse of MC). NMCS is computed only for weapon systems. NMCS is not computed for weapon system parts, such as engines. Data Source: NAVAIR Deckplate (Moving Average Status reflecting FY18 Qtr4 data). Provided by: OPNAV-N43

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			---Peacetime---	
	Total	Mobilization	Operating	Other
1. INVENTORY BOP	59,568.4	0.0	31,162.4	28,405.9
2. BOP INVENTORY ADJUSTMENTS	77.8	0.0	4,257.2	(4,179.4)
A. RECLASSIFICATION CHANGE (memo)	0.0	0.0	4,200.8	(4,200.8)
B. PRICE CHANGE AMOUNT (memo)	77.8	0.0	56.5	21.3
C. INVENTORY RECLASSIFIED AND REPRICED	59,646.2	0.0	35,419.7	24,226.5
3. RECEIPTS AT STANDARD	3,459.9	0.0	3,388.7	71.2
4. SALES AT STANDARD	7,149.8	0.0	7,149.8	0.0
5. INVENTORY ADJUSTMENTS				
A. CAPITALIZATIONS + or (-)	2,109.4	0.0	1,855.4	254.0
B. RETURNS FROM CUSTOMERS FOR CREDIT	377.9	0.0	358.2	19.7
C. RETURNS FROM CUSTOMERS, NO CREDIT	17,308.8	0.0	8,591.4	8,717.4
D. RETURNS TO SUPPLIERS (-)	0.0	0.0	0.0	0.0
E. TRANSFERS TO PROP. DISPOSAL (-)	(4,034.3)	0.0	0.0	(4,034.3)
F. ISSUES/RECEIPTS WITHOUT REIMBURSEMENT + or (-)	(189.2)	0.0	(5.9)	(183.3)
G. OTHER (listed in Section 9)	(8,798.1)	0.0	(9,469.8)	671.7
H. TOTAL ADJUSTMENTS	6,774.6	0.0	1,329.2	5,445.3
6. INVENTORY EOP	62,730.9	0.0	32,987.8	29,743.1
7. INVENTORY EOP (REVALUED)	38,018.2	0.0	21,300.4	16,717.8
A. APPROVED ACQUISITION OBJECTIVE (memo)				13,233.0
B. ECONOMIC RETENTION (memo)				1,512.6
C. CONTINGENCY RETENTION (memo)				1,915.4
D. POTENTIAL DOD REUTILIZATION (memo)				56.8
8. INVENTORY ON ORDER EOP (memo)	4,669.2	0.0	4,669.2	0.0
9. NARRATIVE:				
Other adjustments (Total posted to line 5g):				
Other Gains/Losses	5,442.0	0.0	5,123.7	318.3
Strata Transfers	4.7	0.0	(348.7)	353.4
Net/Standard Difference	(14,244.8)	0.0	(14,244.8)	0.0
Total	(8,798.1)	0.0	(9,469.8)	671.7

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			---Peacetime---	
	Total	Mobilization	Operating	Other
1. INVENTORY BOP	62,730.9	0.0	32,987.8	29,743.1
2. BOP INVENTORY ADJUSTMENTS	(50.6)	0.0	4,112.3	(4,162.9)
A. RECLASSIFICATION CHANGE (memo)	0.0	0.0	4,200.8	(4,200.8)
B. PRICE CHANGE AMOUNT (memo)	(50.6)	0.0	(88.5)	37.9
C. INVENTORY RECLASSIFIED AND REPRICED	62,680.2	0.0	37,100.0	25,580.2
3. RECEIPTS AT STANDARD	3,436.6	0.0	3,432.7	4.0
4. SALES AT STANDARD	7,677.7	0.0	7,677.7	0.0
5. INVENTORY ADJUSTMENTS				
A. CAPITALIZATIONS + or (-)	146.6	0.0	31.1	115.5
B. RETURNS FROM CUSTOMERS FOR CREDIT	423.2	0.0	401.1	22.1
C. RETURNS FROM CUSTOMERS, NO CREDIT	20,279.7	0.0	10,811.4	9,468.4
D. RETURNS TO SUPPLIERS (-)	0.0	0.0	0.0	0.0
E. TRANSFERS TO PROP. DISPOSAL (-)	(3,106.5)	0.0	(0.0)	(3,106.5)
F. ISSUES/RECEIPTS WITHOUT REIMBURSEMENT + or (-)	(5.9)	0.0	(5.9)	0.0
G. OTHER (listed in Section 9)	(12,588.6)	0.0	(10,689.5)	(1,899.1)
H. TOTAL ADJUSTMENTS	5,148.5	0.0	548.1	4,600.4
6. INVENTORY EOP	63,587.7	0.0	33,403.2	30,184.5
7. INVENTORY EOP (REVALUED)	37,590.3	0.0	21,064.0	16,526.3
A. APPROVED ACQUISITION OBJECTIVE (memo)				13,117.7
B. ECONOMIC RETENTION (memo)				1,476.6
C. CONTINGENCY RETENTION (memo)				1,874.7
D. POTENTIAL DOD REUTILIZATION (memo)				57.2
8. INVENTORY ON ORDER EOP (memo)	4,936.8	0.0	4,936.8	0.0
9. NARRATIVE:				
Other adjustments (Total posted to line 5g):				
Other Gains/Losses	65.6	0.0	50.2	15.4
Strata Transfers	0.0	0.0	1,914.5	(1,914.5)
Net/Standard Difference	(12,654.2)	0.0	(12,654.2)	0.0
Total	(12,588.6)	0.0	(10,689.5)	(1,899.1)

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			---Peacetime---	
	Total	Mobilization	Operating	Other
1. INVENTORY BOP	63,587.7	0.0	33,403.2	30,184.5
2. BOP INVENTORY ADJUSTMENTS	1,342.7	0.0	5,281.9	(3,939.2)
A. RECLASSIFICATION CHANGE (memo)	0.0	0.0	4,200.8	(4,200.8)
B. PRICE CHANGE AMOUNT (memo)	1,342.7	0.0	1,081.1	261.6
C. INVENTORY RECLASSIFIED AND REPRICED	64,930.4	0.0	38,685.0	26,245.3
3. RECEIPTS AT STANDARD	3,046.8	0.0	3,043.2	3.6
4. SALES AT STANDARD	8,126.7	0.0	8,126.7	0.0
5. INVENTORY ADJUSTMENTS				
A. CAPITALIZATIONS + or (-)	149.5	0.0	31.6	117.9
B. RETURNS FROM CUSTOMERS FOR CREDIT	404.6	0.0	383.9	20.8
C. RETURNS FROM CUSTOMERS, NO CREDIT	24,729.6	0.0	13,725.4	11,004.1
D. RETURNS TO SUPPLIERS (-)	(0.0)	0.0	(0.0)	0.0
E. TRANSFERS TO PROP. DISPOSAL (-)	(3,134.3)	0.0	(0.0)	(3,134.3)
F. ISSUES/RECEIPTS WITHOUT REIMBURSEMENT + or (-)	(6.0)	0.0	(6.0)	0.0
G. OTHER (listed in Section 9)	(16,911.5)	0.0	(13,848.9)	(3,062.6)
H. TOTAL ADJUSTMENTS	5,231.9	0.0	286.1	4,945.8
6. INVENTORY EOP	65,082.3	0.0	33,887.6	31,194.7
7. INVENTORY EOP (REVALUED)	38,020.7	0.0	21,086.4	16,934.4
A. APPROVED ACQUISITION OBJECTIVE (memo)				13,486.5
B. ECONOMIC RETENTION (memo)				1,486.2
C. CONTINGENCY RETENTION (memo)				1,901.8
D. POTENTIAL DOD REUTILIZATION (memo)				59.8
8. INVENTORY ON ORDER EOP (memo)	4,966.7	0.0	4,960.8	5.9
9. NARRATIVE:				
Other adjustments (Total posted to line 5g):				
Other Gains/Losses	2.9	0.0	(8.6)	11.5
Strata Transfers	0.0	0.0	3,074.1	(3,074.1)
Net/Standard Difference	(16,914.4)	0.0	(16,914.4)	0.0
Total	(16,911.5)	0.0	(13,848.9)	(3,062.6)

12. Marine Corps Supply

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NARRATIVE
DEPARTMENT OF THE NAVY
SUPPLY MANAGEMENT – MARINE CORPS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Mission Statement/Overview:
The Marine Corps, Supply Management Activity Group (MC SMAG) performs inventory management functions that result in the sale of consumable and reparable items to support Department of Defense (DoD), federal, and non-federal war fighting weapon systems supply needs. Costs related to providing such inventory (material) support to customers are recouped through the application of stabilized rates that include recovery for cost elements such as oversight/inventory management and cost required to stock, store, receive, and issue such assets.

MC SMAG is divided into the following three Budget Projects (BP) to organize the financial operations of the fund.

	Budget Project
Wholesale – Depot Level Repairables	BP84
Retail – Consumable Retail Centrally Managed	BP28
Operations – Cost of Operations	BP91

Activity Group Composition:	**Location**
Marine Corps Inventory Control Point	Albany, GA
Direct Support Stock Control	Barstow, CA

Significant Changes Since the FY 2019 President's Budget:
The FY 2020 budget estimate includes no significant changes since the FY 2019 President's Budget.

Financial Profile:

Revenue/Expense/Operating Results ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Net Revenue	$106.4	$121.8	$121.7
Expense	$111.3	$121.6	$125.6
Operating Results	($4.9)	$0.2	($3.9)
Capital Surcharge	$0.0	$0.0	$0.0
Net Operating Results (NOR)	($4.9)	$0.2	($3.9)
Prior Year AOR	$4.0	($0.9)	$9.8
Other Changes Affecting AOR	$0.0	$10.5	($5.9)
Accumulated Operating Results (AOR)	($0.9)	$9.8	$0.0

Some totals may not add due to rounding.

NARRATIVE
DEPARTMENT OF THE NAVY
SUPPLY MANAGEMENT – MARINE CORPS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Revenue and Expense: Annual revenue and expenses fluctuate based on projected demand from the operating forces. SMAG will be purchasing long lead parts to support resulting in higher sales and revenue.

Operating Results: Net Operating Result fluctuates across the budget years due to changes in operating tempo and the projected demand pattern from customers. The net result is a balanced budget that achieves zero AOR in FY 2020.

Obligation Authority ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Wholesale	$72.3	$108.7	$108.5
Retail	-$1.6	$0.0	$0.0
Total	$70.7	$108.7	$108.5

Some totals may not add due to rounding.

Wholesale: Obligation Authority (OA) supports the acquisition and repair of reparable spare parts as well as the cost of operating the SMAG wholesale enterprise. In FY 2018 there was a credit received from the Material Returns Program (MRP) as well as planned contractual workload shifting to FY 2019. Additionally, FY 2020, the budget increases due to maintenance and the establishment of additional long-term contracts.

Retail: OA for retail operations reflects a negative balance in FY 2018 due to receipt of credits from excess material returned to the Source of Supply (SOS).

Collections/Disbursement/Outlays ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Collections	$97.9	$103.0	$104.0
Disbursements	$35.3	$110.4	$114.6
Transfers (CIT Reimbursement)	$0.0	$0.0	$0.0
Outlays (Incorporates CIT)	($62.6)	$7.4	$10.6

Some totals may not add due to rounding.

Collections: Collections are based on revenue projections. In FY 2018, collection includes a high volume of demands for the Amphibious Assault Vehicle secondary depot repairables (SDRs). Collections were also higher due to large amounts of credit received from the MRP. The collections increase through the budget years due to anticipation of additional MRP credits as well as projected customer demands from the operating forces.

NARRATIVE
DEPARTMENT OF THE NAVY
SUPPLY MANAGEMENT – MARINE CORPS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Disbursements: FY 2018 disbursements reflect actual expenditures supporting the operating forces for material, supplies, and DLA transportation cost. FY 2019 and FY 2020 disbursements remain steady and reflect normal demand.

Sales ($Millions):	**FY 2018**	**FY 2019**	**FY 2020**
Wholesale	$103.6	$121.3	$115.5
Retail	$2.8	$0.6	$0.5
Total (Less Provisioning)	$106.4	$121.9	$116.0

Some totals may not add due to rounding.

Wholesale: Gross sales increase in FY 2019 due to the staffing of FY 2018 unexecuted workload. FY 2020 dips in sales due to AOR adjustment.

Retail: Sales from retail operations decline across the budget due to FY 2019 and FY 2020 only reflecting the RCM program anticipated demands.

Metrics: Metrics provide information on the scope of work performed by USMC-SM. Metrics aligned to reflect current obligations and sales projections.

	FY 2018	**FY 2019**	**FY 2020**
Items Managed	4,792	4,876	4,958
Requisitions Received	3,513	3,516	3,514
Receipts	1,114	1,118	1,189
Issues	4,023	4,087	4,128
Contracts Executed	158	157	162

Undelivered Orders: Undelivered orders represent contracts or orders for goods for which a liability has not yet accrued. The accrual of the liability creates an outlay requirement.

	FY 2018	**FY 2019**	**FY 2020**
Undelivered Orders ($Millions):	$84.4	$80.0	$80.0

War Reserve Material (WRM): WRM funding supports the procurement, replenishment, stock and contracted asset availability guarantee of consumable and reparable items deemed necessary for war reserve. No WRM OA or direct appropriations are requested in this budget..

NARRATIVE
DEPARTMENT OF THE NAVY
SUPPLY MANAGEMENT – MARINE CORPS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019

Performance Indicators: In addition to core metrics such as net and accumulated operating results, supply chain channel fill rates measures the capacity of the supply chain to respond to customer demand.

	FY 2018	FY 2019	FY 2020
Supply Material Availability	55%	60%	65%
Report of Discrepancy Processing Time	55	55	55

Unit Cost:	FY 2018	FY 2019	FY 2020
Wholesale	0.698	0.895	0.894
Retail	-0.561	0.018	0.019

The cost per unit sold is based on total cost and total anticipated gross sales. Unit cost can change in the year of execution based on the relationship between obligations and sales.

Composite Rates:	FY 2018	FY 2019	FY 2020
Annual Price Change (APC)	-2.250%	-2.250%	-8.090%
Composite Cost Recovery Rate (CRR)	17.170%	14.170%	4.087%

Cost categories within the CRR include civilian pay, distribution depot costs, transportation costs, other Department of Defense bills associated with supply operations, and costs to recoup Accumulated Operating Results (AOR) gains or losses. The FY 2020 CRR decreases due to returning a gain to the customers and achieving a zero AOR. The CRR is tied to customer funding and abilities to fill customer orders.

Staffing:

Civilian/Military ES & Workyears:	FY 2018	FY 2019	FY 2020
Civilian End Strength	26	26	26
Civilian Workyears (straight time)	20	24	24
Military End Strength	0	0	0
Military Workyears	0	0	0

Civilian staffing remains stable and provides continuous support.

Capital Investment Program (CIP):
MC SMAG does not have a CIP budget request.

REVENUE AND EXPENSES
DEPARTMENT OF THE NAVY
SUPPLY MANAGEMENT - MARINE CORPS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	FY 2018	FY 2019	FY 2020
Revenue:			
Gross Sales			
Operations	106.379	121.867	115.935
Capital Surcharges	0.000	0.000	0.000
Capital Investment Recovery except Maj Const	0.000	0.000	0.000
Total Gross Sales	106.379	121.867	115.935
Major Construction Dep	0.000	0.000	0.000
Other Income	0.000	0.000	0.000
Refunds/Discounts (- Credit Sales)	-0.027	-0.096	-0.095
Total Income	106.352	121.771	115.840
Expenses:			
Cost of Materiel Sold from Inventory	98.135	107.380	111.397
Salaries and Wages:			
Military Personnel Compensation & Benefits	0.000	0.000	0.000
Civilian Personnel Compensation & Benefits	2.001	2.310	2.310
Travel and Transportation of Personnel	0.017	0.075	0.075
Material & Supplies (Internal Operations)	0.000	0.000	0.000
Equipment	0.000	0.010	0.010
Other Purchases from NWCF	9.877	9.900	9.900
Transportation of Things	0.008	0.075	0.075
Capital Investment Recovery	0.000	0.000	0.000
Printing and Reproduction	0.000	0.000	0.000
Advisory and Assistance Services	0.000	0.000	0.000
Rent, Communication, Utilities & Misc Charges	0.006	0.022	0.022
Other Purchased Services	1.238	1.825	1.825
Total Expenses	111.282	121.597	125.614
Operating Result	-4.930	0.174	-9.774
Less Capital Surcharge reservation	0.000	0.000	0.000
Plus Appro Affecting NOR/AOR	0.000	0.000	0.000
Plus Other Changes Affecting NOR	0.000	0.000	5.885
Net Operating Result	-4.930	0.174	-3.889
Prior Year AOR	4.019	-0.911	9.774
Other Changes Affecting AOR	0.000	10.511	-5.885
Accumulated Operating Result	-0.911	9.774	0.000
Non-Recoverable Adjustments impacting AOR	0.000	0.000	0.000
AOR for budget purposes	-0.911	9.774	0.000

SOURCES OF NEW ORDERS & REVENUE
DEPARTMENT OF THE NAVY
SUPPLY MANAGEMENT - MARINE CORPS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	FY 2018	FY 2019	FY 2020
1. New Orders	0.0	0.0	0.0
a. Orders from DoD Components:	0.0	0.0	0.0
Department of the Navy	0.0	0.0	0.0
O & M, Navy	0.0	0.0	0.0
O & M, Marine Corps	94.1	91.1	94.7
O & M, Navy Reserve	0.0	0.0	0.0
O & M, Marine Corps Reserve	0.0	0.0	0.0
Reserve Personnel, Navy	0.0	0.0	0.0
Military Personnel, Navy	0.0	0.0	0.0
Military Personnel, Marine Corps	0.0	0.0	0.0
Aircraft Procurement, Navy	0.0	0.0	0.0
Weapons Procurement, Navy	0.0	0.0	0.0
Shipbuilding & Conversion, Navy	0.0	0.0	0.0
Other Procurement, Navy	0.0	0.0	0.0
Procurement, Marine Corps	0.0	0.0	0.0
Research, Dev., Test, & Eval., Navy	0.0	0.0	0.0
National Defense Sealift Fund	0.0	0.0	0.0
Other Navy Appropriations	0.0	0.0	0.0
Other Marine Corps Appropriations	0.0	0.0	0.0
Navy Working Capital Fund	0.0	0.0	0.0
Orders from Other DoD Components			
Department of the Army	8.1	8.2	8.5
Department of the Air Force	0.1	0.2	0.2
DoD Other	0.3	0.4	0.4
b. Orders from other Fund Activity Groups			
Distribution Depots, Navy	13.9	14.7	15.2
Logistics Support, Navy	0.0	0.0	0.0
c. Total DoD	116.6	114.7	119.0
d. Other Orders:			
Other Federal Agencies	0.0	2.8	2.9
Trust Fund	0.0	0.0	0.0
Foreign Military Sales	-0.6	0.0	0.0
Non Federal Agencies*	0.0	0.0	0.0
Total New Orders	115.9	117.5	121.8
2. Carry-In Orders	74.8	84.4	80.0
3. Total Gross Orders	190.8	201.9	201.8
4. Carry-Out Orders	84.4	80.0	80.0
5. Gross Sales	106.4	121.9	121.8
Reimbursable Orders (BP 91)	0.0	0.0	0.0
6. Credit (-)	0.0	0.0	0.0
7. Net Sales	0.0	0.0	0.0

* Non-federal agencies line includes cash sales

SUPPLY MANAGEMENT SUMMARY
DEPARTMENT OF THE NAVY
SUPPLY MANAGEMENT - MARINE CORPS
FISCAL YEAR (FY) 2020 PROGRAM / BUDGET SUBMISSION TO OSD / OMB
MARCH 2019
(DOLLARS IN MILLIONS)

DIVISION	NET CUSTOMER ORDERS	NET SALES	OPERATING	MOBILIZATION	TOTAL OBLIGATIONS	VARIABILITY TARGET	TARGET TOTAL	CAPITAL IMRPROVEMENT PROGRAM	CREDIT SALES
BP 28 RCM									
FY18	2.7	2.8	-1.6	0.0	-1.6	0.0	-1.6	0.0	0.0
FY19	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FY20	0.6	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BP 28 DSSC									
FY18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FY19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FY20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BP 38									
FY18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FY19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FY20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BP 84									
FY18	113.2	103.6	59.1	0.0	59.1	0.0	59.1	0.0	0.1
FY19	116.8	121.2	94.3	0.0	94.3	0.0	94.3	0.0	0.1
FY20	121.3	115.5	94.4	0.0	94.4	0.0	94.4	0.0	0.1
BP 91									
FY18	0.0	0.0	13.1	0.0	13.1	0.0	13.1	0.0	0.0
FY19	0.0	0.0	14.2	0.0	14.2	0.0	14.2	0.0	0.0
FY20	0.0	0.0	14.2	0.0	14.2	0.0	14.2	0.0	0.0
TOTAL									
FY18	115.9	106.4	70.7	0.0	70.7	0.0	70.7	0.0	0.1
FY19	117.4	121.8	108.5	0.0	108.5	0.0	108.5	0.0	0.1
FY20	121.9	116.0	108.6	0.0	108.6	0.0	108.6	0.0	0.1

OPERATING REQUIREMENTS BY WEAPON SYSTEM
DEPARTMENT OF THE NAVY
SUPPLY MANAGEMENT - MARINE CORPS
BP 28 - RCM
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)
FY 2018

Weapon System Name	NMCRS Rates*	Basic Replen	Outfitting	Special Programs	Rework	Total
COMMUNICATION/SURVEILLANCE	0.2%	-0.026	0.000	0.000	0.000	-0.026
ORDNANCE TANK AUTOMOTIVE	1.2%	-1.960	0.000	0.000	0.000	-1.960
GUIDED MISSILES AND EQUIPMENT	0.1%	-0.040	0.000	0.000	0.000	-0.040
ENGINEER SUPPORT AND CONST	0.0%	-0.031	0.000	0.000	0.000	-0.031
GENERAL PROPERTY	0.1%	0.047	0.000	0.000	0.000	0.047
TOTAL		-2.010	0.000	0.000	0.000	-2.010

*Not Mission Capable Supply (NMCS) - Percentage of time aircraft are Not Mission Capable due to a supply shortage. Used in conjunction

FY 2019

Weapon System Name	NMCRS Rates*	Basic Replen	Outfitting	Special Programs	Rework	Total
COMMUNICATION/SURVEILLANCE	0.2%	0.00	0.00	0.00	0.00	0.00
ORDNANCE TANK AUTOMOTIVE	1.2%	0.00	0.00	0.00	0.00	0.00
GUIDED MISSILES AND EQUIPMENT	0.1%	0.00	0.00	0.00	0.00	0.00
ENGINEER SUPPORT AND CONST	0.0%	0.00	0.00	0.00	0.00	0.00
GENERAL PROPERTY	0.1%	0.00	0.00	0.00	0.00	0.00
TOTAL		0.00	0.00	0.00	0.00	0.00

*Not Mission Capable Supply (NMCS) - Percentage of time aircraft are Not Mission Capable due to a supply shortage. Used in conjunction

FY 2020

Weapon System Name	NMCRS Rates*	Basic Replen	Outfitting	Special Programs	Rework	Total
COMMUNICATION/SURVEILLANCE	0.2%	0.00	0.00	0.00	0.00	0.00
ORDNANCE TANK AUTOMOTIVE	1.2%	0.00	0.00	0.00	0.00	0.00
GUIDED MISSILES AND EQUIPMENT	0.1%	0.00	0.00	0.00	0.00	0.00
ENGINEER SUPPORT AND CONST	0.0%	0.00	0.00	0.00	0.00	0.00
GENERAL PROPERTY	0.1%	0.00	0.00	0.00	0.00	0.00
TOTAL		0.00	0.00	0.00	0.00	0.00

*Not Mission Capable Supply (NMCS) - Percentage of time aircraft are Not Mission Capable due to a supply shortage. Used in conjunction

OPERATING REQUIREMENTS BY WEAPON SYSTEM
DEPARTMENT OF THE NAVY
SUPPLY MANAGEMENT - MARINE CORPS
BP 84
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)
FY 2018

Weapon System Name	NMCRS Rates*	Basic Replen	Outfitting	Special Programs	Rework	Total
COMMUNICATION/SURVEILLANCE	0.3%	(28.133)	0.0	0.0	34.847	6.714
ORDNANCE TANK AUTOMOTIVE	0.3%	(0.521)	0.0	0.0	4.843	4.322
GUIDED MISSILES AND EQUIPMENT	0.0%	0.097	0.0	0.0	(0.071)	(0.168)
ENGINEER SUPPORT AND CONST	0.0%	6.878	0.0	0.0	0.627	7.505
GENERAL PROPERTY	0.0%	36.436	0.0	0.0	4.327	40.763
TOTAL		14.563	0.0	0.0	44.568	59.131

*Not Mission Capable Supply (NMCS) - Percentage of time aircraft are Not Mission Capable due to a supply shortage. Used in

FY 2019

Weapon System Name	NMCRS Rates*	Basic Replen	Outfitting	Special Programs	Rework	Total
COMMUNICATION/SURVEILLANCE	0.3%	9.150	0.0	0.0	45.515	54.665
ORDNANCE TANK AUTOMOTIVE	0.3%	2.950	0.0	0.0	12.500	15.450
GUIDED MISSILES AND EQUIPMENT	0.0%	2.750	0.0	0.0	0.275	3.025
ENGINEER SUPPORT AND CONST	0.0%	2.450	0.0	0.0	3.140	5.590
GENERAL PROPERTY	0.0%	9.500	0.0	0.0	18.065	27.565
TOTAL		26.800	0.000	0.000	79.495	106.295

*Not Mission Capable Supply (NMCS) - Percentage of time aircraft are Not Mission Capable due to a supply shortage. Used in

FY 2020

Weapon System Name	NMCRS Rates*	Basic Replen	Outfitting	Special Programs	Rework	Total
COMMUNICATION/SURVEILLANCE	0.3%	9.150	0.000	0.000	45.515	54.665
ORDNANCE TANK AUTOMOTIVE	0.3%	2.950	0.000	0.000	12.500	15.450
GUIDED MISSILES AND EQUIPMENT	0.0%	3.000	0.000	0.000	0.275	3.275
ENGINEER SUPPORT AND CONST	0.0%	2.250	0.000	0.000	0.690	2.940
GENERAL PROPERTY	0.0%	9.500	0.000	0.000	8.565	18.065
TOTAL		26.850	0.000	0.000	67.545	94.395

*Not Mission Capable Supply (NMCS) - Percentage of time aircraft are Not Mission Capable due to a supply shortage. Used in

Inventory Status
Department of the Navy
Supply Management - Marine Corps
Fiscal Year (FY) 2020 Budget Estimates
MARCH 2019
($ in Millions)
FISCAL YEAR 2018

			---- Peacetime ----	
	Total	Mobilization	Operating	Other
1. INVENTORY BOP	1,479.3	33.0	1,446.3	0.0
		0.0	0.0	
2. BOP INVENTORY ADJUSTMENTS	0.0	0.0	0.0	0.0
A. RECLASSIFICATION CHANGE (memo)	0.0	0.0	0.0	0.0
B. PRICE CHANGE AMOUNT (memo)	0.0	0.0	0.0	0.0
C. INVENTORY RECLASSIFIED AND REPRICED	1,479.3	33.0	1,446.3	0.0
3. RECEIPTS AT STANDARD	20.3	0.0	20.3	0.0
4. SALES AT STANDARD	169.3	0.0	169.3	0.0
5. INVENTORY ADJUSTMENTS				
A. CAPITALIZATIONS + or (-)	73.5	-67.8	73.6	0.0
B. RETURNS FROM CUSTOMERS FOR CREDIT +	0.1	0.0	0.1	0.0
C. RETURNS FROM CUSTOMERS W/O CREDIT	448.0	0.0	448.0	0.0
D. RETURNS TO SUPPLIERS (-)	-56,615.2	0.0	-56,615.2	0.0
E. TRANSFERS TO PROP. DISPOSAL (-)	-177,310.4	-0.7	-177,309.7	0.0
F. ISSUES/RECEIPTS WITHOUT		0.0	0.0	
REIMBURSEMENT + or (-)	-102,043.4	0.0	-102,043.4	0.0
G. OTHER (list/explain)	-172,115.5	-6,366.2	-165,749.3	0.0
H. TOTAL ADJUSTMENTS	13.5	-6,434.6	20.0	0.0
6. INVENTORY EOP	1,343.9	26.6	1,317.3	0.0
7. INVENTORY EOP, REVALUED	1,114.5	25.8	1,088.6	0.0
A. ECONOMIC RETENTION (memo)		0.0	0.0	0.1
B. CONTINGENCY RETENTION (memo)		0.0	0.0	0.3
C. POTENTIAL DOD EXCESS (memo)		0.0	0.0	0.2
8. INVENTORY ON ORDER EOP (memo)	0.0	0.0	0.0	0.0
9. NARRATIVE:				
Other adjustments (line 5g):				
Other Gains/Losses	-172,115.5	-6,366.2	-165,749.3	0.0
K3 Adjust	0.0	0.0	0.0	0.0
SIT Change	0.0	0.0	0.0	0.0
Strata Transfers	0.0	0.0	0.0	0.0
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Total	-172,115.5	-6,366.2	-165,749.3	0.0

Inventory Status
Department of the Navy
Supply Management - Marine Corps
Fiscal Year (FY) 2020 Budget Estimates
MARCH 2019
($ in Millions)
FISCAL YEAR 2019

			---- Peacetime ----	
	Total	Mobilization	Operating	Other
1. INVENTORY BOP	1,343.9	26.6	1,317.3	0.0
2. BOP INVENTORY ADJUSTMENTS	1.2	0.4	0.8	0.0
A. RECLASSIFICATION CHANGE (memo)	0.0	0.0	0.0	0.0
B. PRICE CHANGE AMOUNT (memo)	-28,009.9	0.3	-28,320.2	0.0
C. INVENTORY RECLASSIFIED AND REPRICED	1,315.8	26.9	1,289.0	0.0
3. RECEIPTS AT STANDARD	0.0	0.0	0.0	0.0
4. SALES AT STANDARD	0.0	0.0	0.0	0.0
5. INVENTORY ADJUSTMENTS				
A. CAPITALIZATIONS + or (-)	0.0	0.0	0.0	0.0
B. RETURNS FROM CUSTOMERS FOR CREDIT +	0.0	0.0	0.0	0.0
C. RETURNS FROM CUSTOMERS W/O CREDIT	0.0	0.0	0.0	0.0
D. RETURNS TO SUPPLIERS (-)	0.0	0.0	0.0	0.0
E. TRANSFERS TO PROP. DISPOSAL (-)	0.0	0.0	0.0	0.0
F. ISSUES/RECEIPTS WITHOUT		0.0	0.0	0.0
REIMBURSEMENT + or (-)	0.0	0.0	0.0	0.0
G. OTHER (list/explain)	0.0	0.0	0.0	0.0
H. TOTAL ADJUSTMENTS	0.0	0.0	0.0	0.0
6. INVENTORY EOP	1,315.8	26.9	1,289.0	0.0
7. INVENTORY EOP, REVALUED	1,043.9	26.0	1,017.9	0.0
A. ECONOMIC RETENTION (memo)		0.0	0.0	0.0
B. CONTINGENCY RETENTION (memo)		0.0	0.0	0.4
C. POTENTIAL DOD EXCESS (memo)		0.0	0.0	0.0
8. INVENTORY ON ORDER EOP (memo)	0.1	0.0	0.1	0.0
9. NARRATIVE:				
Other adjustments (line 5g):				
Other Gains/Losses	0.0	0.0	0.0	0.0
K3 Adjust	0.0	0.0	0.0	0.0
SIT Change	0.0	0.0	0.0	0.0
Strata Transfers	0.0	0.0	0.0	0.0
	-----	-----	-----	-----
Total	0.0	0.0	0.0	0.0

Inventory Status
Department of the Navy
Supply Management - Marine Corps
Fiscal Year (FY) 2020 Budget Estimates
MARCH 2019
($ in Millions)
FISCAL YEAR 2020

		---- Peacetime ----		
	Total	Mobilization	Operating	Other
1. INVENTORY BOP	1,315.8	26.9	1,289.0	0.0
2. BOP INVENTORY ADJUSTMENTS	1.4	0.5	0.9	0.0
A. RECLASSIFICATION CHANGE (memo)	0.0	0.0	0.0	0.0
B. PRICE CHANGE AMOUNT (memo)	-24,811.8	0.4	-25,184.8	0.0
C. INVENTORY RECLASSIFIED AND REPRICED	1,291.0	27.3	1,263.8	0.0
3. RECEIPTS AT STANDARD	0.0	0.0	0.0	0.0
4. SALES AT STANDARD	0.0	0.0	0.0	0.0
5. INVENTORY ADJUSTMENTS				
A. CAPITALIZATIONS + or (-)	0.0	0.0	0.0	0.0
B. RETURNS FROM CUSTOMERS FOR CREDIT +	0.0	0.0	0.0	0.0
C. RETURNS FROM CUSTOMERS W/O CREDIT	0.0	0.0	0.0	0.0
D. RETURNS TO SUPPLIERS (-)	0.0	0.0	0.0	0.0
E. TRANSFERS TO PROP. DISPOSAL (-)	0.0	0.0	0.0	0.0
F. ISSUES/RECEIPTS WITHOUT		0.0	0.0	0.0
REIMBURSEMENT + or (-)	0.0	0.0	0.0	0.0
G. OTHER (list/explain)	0.0	0.0	0.0	0.0
H. TOTAL ADJUSTMENTS	0.0	0.0	0.0	0.0
6. INVENTORY EOP	1,291.0	27.3	1,263.8	0.0
7. INVENTORY EOP, REVALUED	1,071.2	26.6	1,044.7	0.0
A. ECONOMIC RETENTION (memo)		0.0	0.0	0.0
B. CONTINGENCY RETENTION (memo)		0.0	0.0	0.3
C. POTENTIAL DOD EXCESS (memo)		0.0	0.0	0.0
8. INVENTORY ON ORDER EOP (memo)	0.1	0.0	0.1	0.0
9. NARRATIVE:				
Other adjustments (line 5g):				
Other Gains/Losses	0.0	0.0	0.0	0.0
K3 Adjust	0.0	0.0	0.0	0.0
SIT Change	0.0	0.0	0.0	0.0
Strata Transfers	0.0	0.0	0.0	0.0
	---	---	---	---
Total	0.0	0.0	0.0	0.0

WAR RESERVE MATERIAL
DEPARTMENT OF THE NAVY
SUPPLY MANAGEMENT - MARINE CORPS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)
FY 2018

Stockpile Status			
	Total	WRM Protected	WRM Other
1. Inventory BOP @ std	33.008	33.008	0.000
2. Price Change	1.359	1.359	0.000
3. Reclassification	34.367	34.367	0.000
Inventory Changes			
a. Receipts @ std	0.000	0.000	0.000
(1). Purchases	0.000	0.000	0.000
(2). Returns from customers	0.000	0.000	0.000
b. Issues @ std	0.000	0.000	0.000
(1). Sales	0.000	0.000	0.000
(2). Returns to suppliers	0.000	0.000	0.000
(3). Disposals	0.000	0.000	0.000
c. Adjustments @ std	-7.767	-7.767	0.000
(1). Capitalizations	-7.767	-7.767	0.000
(2). Gains and losses	0.000	0.000	0.000
(3). Other	0.000	0.000	0.000
Inventory EOP	26.600	26.600	0.000
Stockpile Costs			
1. Storage	0.000	0.000	0.000
2. Management	0.000	0.000	0.000
3. Maintenance/Other	0.000	0.000	0.000
Total Cost	0.000	0.000	0.000
WRM Budget Request			
1. Obligations @ cost			
a. Additional WRM Investment	0.000	0.000	0.000
b. Replen./Repair WRM Reinvest.	0.000	0.000	0.000
c. Stock Rotation/Obsolescence	0.000	0.000	0.000
d. Assemble/Disassemble	0.000	0.000	0.000
e. Other	0.000	0.000	0.000
Total Request	0.000	0.000	0.000

WAR RESERVE MATERIAL
DEPARTMENT OF THE NAVY
SUPPLY MANAGEMENT - MARINE CORPS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)
FY 2019

Stockpile Status			
	Total	WRM Protected	WRM Other
1. Inventory BOP @ std	26.575	26.575	0.000
2. Price Change	0.310	0.310	0.000
3. Reclassification	26.885	26.885	0.000
Inventory Changes			
a. Receipts @ std	0.000	0.000	0.000
(1). Purchases	0.000	0.000	0.000
(2). Returns from customers	0.000	0.000	0.000
b. Issues @ std	0.000	0.000	0.000
(1). Sales	0.000	0.000	0.000
(2). Returns to suppliers	0.000	0.000	0.000
(3). Disposals	0.000	0.000	0.000
c. Adjustments @ std	0.000	0.000	0.000
(1). Capitalizations	0.000	0.000	0.000
(2). Gains and losses	0.000	0.000	0.000
(3). Other	0.000	0.000	0.000
Inventory EOP	26.885	26.885	0.000
Stockpile Costs			
1. Storage	0.000	0.000	0.000
2. Management	0.000	0.000	0.000
3. Maintenance/Other	0.000	0.000	0.000
Total Cost	0.000	0.000	0.000
WRM Budget Request			
1. Obligations @ cost			
a. Additional WRM Investment	0.000	0.000	0.000
b. Replen./Repair WRM Reinvest.	0.000	0.000	0.000
c. Stock Rotation/Obsolescence	0.000	0.000	0.000
d. Assemble/Disassemble	0.000	0.000	0.000
e. Other	0.000	0.000	0.000
Total Request	0.000	0.000	0.000

WAR RESERVE MATERIAL
DEPARTMENT OF THE NAVY
SUPPLY MANAGEMENT - MARINE CORPS
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)
FY 2020

Stockpile Status			
	Total	WRM Protected	WRM Other
1. Inventory BOP @ std	26.885	26.885	0.000
2. Price Change	0.373	0.373	0.000
3. Reclassification	27.258	27.258	0.000
Inventory Changes			
a. Receipts @ std	0.000	0.000	0.000
(1). Purchases	0.000	0.000	0.000
(2). Returns from customers	0.000	0.000	0.000
b. Issues @ std	0.000	0.000	0.000
(1). Sales	0.000	0.000	0.000
(2). Returns to suppliers	0.000	0.000	0.000
(3). Disposals	0.000	0.000	0.000
c. Adjustments @ std	0.000	0.000	0.000
(1). Capitalizations	0.000	0.000	0.000
(2). Gains and losses	0.000	0.000	0.000
(3). Other	0.000	0.000	0.000
Inventory EOP	27.258	27.258	0.000
Stockpile Costs			
1. Storage	0.000	0.000	0.000
2. Management	0.000	0.000	0.000
3. Maintenance/Other	0.000	0.000	0.000
Total Cost	0.000	0.000	0.000
WRM Budget Request			
1. Obligations @ cost			
a. Additional WRM Investment	0.000	0.000	0.000
b. Replen./Repair WRM Reinvest.	0.000	0.000	0.000
c. Stock Rotation/Obsolescence	0.000	0.000	0.000
d. Assemble/Disassemble	0.000	0.000	0.000
e. Other	0.000	0.000	0.000
Total Request	0.000	0.000	0.000

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13. 6% Depot Capital Investment

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DEPOT MAINTENANCE SIX PERCENT CAPITAL INVESTMENT PLAN
DEPARTMENT OF THE NAVY
FISCAL YEAR (FY) 2020 BUDGET ESTIMATES
MARCH 2019
(DOLLARS IN MILLIONS)

	REVENUE (Maintenance, Repair, Overhaul) 3 year average			BUDGETED CAPITAL		
	FY 15-17	FY 16-18	FY 17-19	FY 2018	FY 2019	FY 2020
	7,095.8	7,406.0	7,961.4			
	7,406.0	7,961.4	8,778.7			
	7,961.4	8,778.7	9,199.9			
Revenue (Avg)	7,487.7	8,048.7	8,646.7			
Working Capital Fund	2,523.0	2,656.6	2,830.4			
Appropriations (if applicable)	4,964.7	5,392.1	5,816.3			
Total Revenue	7,487.7	8,048.7	8,646.7			
WCF Depot Maintenance Capital Investment						
Facilities/ Work Environment				95.9	91.5	73.9
Equipment				40.7	47.4	44.2
Equipment (Non-Capital Investment Program)				17.7	19.5	16.4
Processes				0.0	0.6	0.0
Total WCF Investment				154.2	159.0	134.5
Appropriated Funding						
MILCON				191.6	277.7	219.5
Procurement				173.4	347.8	216.2
Operation & Maintenance				339.4	296.3	407.1
Total Appropriated Funding				704.3	921.7	842.9
Component Total				858.6	1,080.7	977.3
Minimum 6% Investment				449.3	482.9	518.8
Investment Over/Under Requirement				409.3	597.8	458.5
Projected Investment				**11.47%**	**13.43%**	**11.30%**

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