

# The 2023 Value of the U.S. Coast Guard Auxiliary



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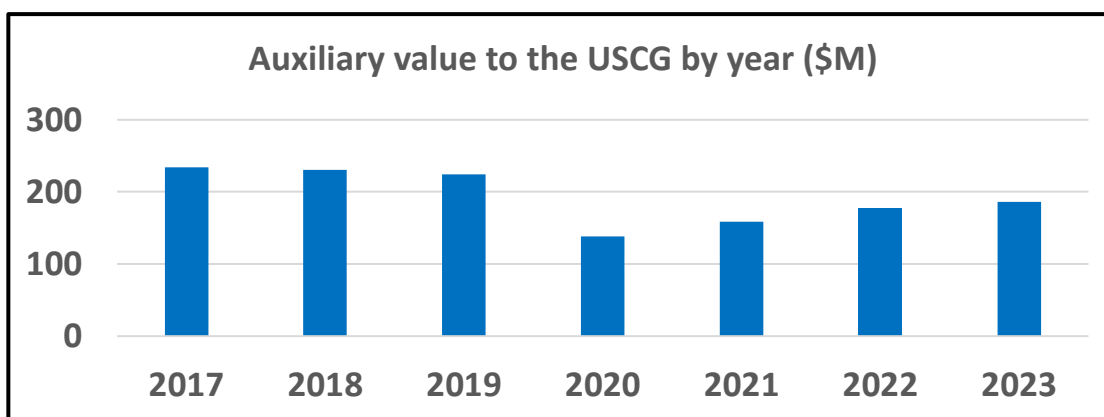
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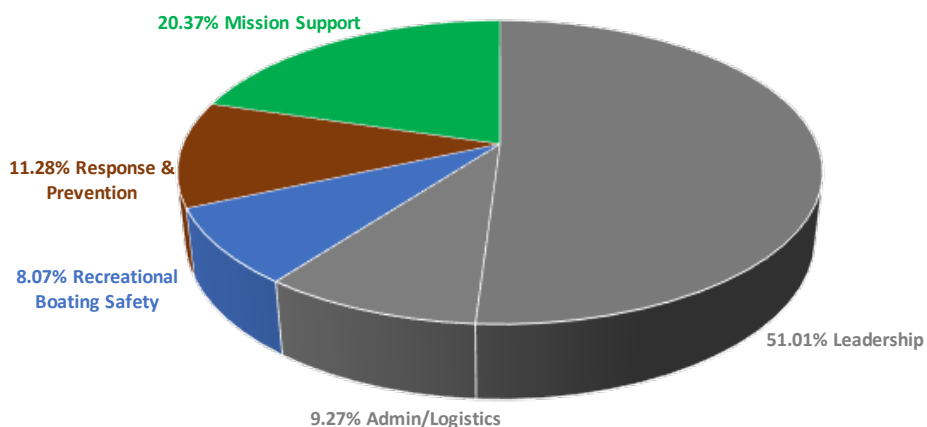
## EXECUTIVE SUMMARY

This is the tenth in a series of annual reports that quantify the monetary value of the contributions of the Auxiliary to the work of the U.S. Coast Guard. Begun in 2014, these reports employ a methodology that is compliant with Generally Accepted Accounting Principles (GAAP) and Federal Accounting Standard (FAS) 116 concerning the value of volunteer labor. This report follows the identical analytical processes that have been used since 2017.

The total financial contributions of the Auxiliary to the Coast Guard over the past seven years is shown in the following chart. Noteworthy is the very significant impact of COVID-19 in 2020 and the slowly growing recovery in 2021, 2022, and 2023.



The distribution of labor value across the principal mission areas of the Auxiliary have remained largely unchanged over time and, for 2023, are expressed in the pie chart below.



***The analysis documented in this report demonstrates that, since the Coast Guard budgeted \$18.99M for the Auxiliary in 2023 and received \$186.54M in service value in return, the Auxiliary returned \$9.82 for each dollar invested.***

## **SECTION 1: Introduction**

### **Purpose**

This is the tenth in a series of annual reports that quantify the monetary value of the contributions of the Auxiliary to the work of the U.S. Coast Guard. Begun in 2014, these reports employ a methodology that is compliant with Generally Accepted Accounting Principles (GAAP) and Federal Accounting Standard (FAS) 116 concerning the value of volunteer labor.

This report provides an accurate and standardized economic valuation of the Coast Guard Auxiliary which enables consistency in reporting, both internal and external to the USCG, that decision makers require. For the Auxiliary itself, a fair valuation enables membership and leadership to assess and validate the value of their contributions to the Coast Guard and to the country.

### **General methodology**

This valuation principally relies upon a replacement cost methodology as described in Appendix A to this report. It is expressed in terms of full-time equivalent (FTE) USCG active-duty personnel, and is computed in terms of the equivalent annual cost of replacing those FTE volunteer labor contributions made by the Auxiliary.

It must be noted that there are significant and persistent source data limitations. Every financial valuation must contend with this problem, but some of the data limitations in this valuation stem from systemic limitations in the Auxiliary data system (AUXDATA). The largest and most well-known among these is the fact that Auxiliary data are self-reported. By no means unique to the Auxiliary, the most likely effect that this limitation has, overall, is to undervalue the Auxiliary contribution.

Additionally, this report separately includes a valuation of Auxiliary contributions, other than labor, that represent a direct monetary benefit to the Coast Guard. These include:

- Cost of Auxiliary air facility maintenance, less SAMA payments
- Cost of Auxiliary surface facility maintenance, less SAMA payments
- Auxiliarist out-of-pocket expenses
- Auxiliarist unreimbursed automotive travel
- Savings that accrue to the Coast Guard Academy

## SECTION 2: Analysis Methodology and 2023 Results

### Auxiliary mission areas and their aggregation

AUXDATA II is used as the sole data source for the labor hours in this valuation. Unlike AUXINFO, which was derived from AUXDATA I, the report function in AUXDATA II generates results by individual mission code. As a consequence, the labor hours associated with each of the 130 unique mission codes are aggregated into the 25 mission categories, shown in Table 1.

Throughout this report, a color code is used to identify the three principal mission areas of the Auxiliary, each being the responsibility of a Deputy National Commodore (DNACO): **Recreational Boating Safety (RBS)**, **Operations (R&P)**, and **Mission Support (MS)**. The two “overhead” functions, Leadership (99A) and Administration/Logistics (99E), are tabulated separately and shown in grey.

Mission category	Raw labor hours
RBS - Leadership (99A)	1,068,182
<b>RBS - RBS Support (99B)</b>	<b>126,019</b>
<b>RBS - Marine Safety (99C)</b>	<b>11,677</b>
<b>RBS - Training Support (99D)</b>	<b>287,404</b>
RBS - Admin/Logistics (99E)	274,007
<b>NS - Navigation Systems (03, 30, 31,32)</b>	<b>5,946</b>
<b>CGADMIN - CG Administrative Support (08, 92)</b>	<b>117,737</b>
<b>CGOPS - CG Operational Support (07, 20, 22, 26)</b>	<b>100,371</b>
<b>GOVSUP - Government Agency Support (41, 42, 43)</b>	<b>10,514</b>
<b>HS - Health Services (93)</b>	<b>5,934</b>
<b>IA - International Affairs (60)</b>	<b>5,075</b>
<b>ICE - Ice Operations (53)</b>	<b>178</b>
<b>LEGAL - Legal Services (94)</b>	<b>3,279</b>
<b>LO - Legislative Outreach (65)</b>	<b>1,315</b>
<b>MP - Maritime Patrol (01, 02,54A,55A)</b>	<b>147,449</b>
<b>MS - Marine Safety (70, 80)</b>	<b>43,537</b>
<b>MT - Member Training (06)</b>	<b>27,869</b>
NOMISS - No Mission Listed	0
<b>SAR - Search &amp; Rescue(23, 24)</b>	<b>1,898</b>
<b>UEM - Emergency Management (28)</b>	<b>11,514</b>
<b>UMDV - Marine Dealer Visits (11)</b>	<b>32,292</b>
<b>UPA - Public Affairs (10)</b>	<b>115,666</b>
<b>UPE - Public Education (14)</b>	<b>38,681</b>
<b>UREC - Recruiting Assistance (09, 90)</b>	<b>20,387</b>
<b>VSC - Vessel Safety Check (91)</b>	<b>45,874</b>
<b>TOTAL</b>	<b>2,502,806</b>

**Table 1: 2023 Auxiliary mission hours by mission categories**

The dominant data element is Mission Code 99 which, as noted in prior years, is broken into its five component parts, with each part considered independently as to its proper allocation. This provides a means to distinguish that portion of 99 labor that provides direct support to the USCG in the pursuit of its Homeland Security charter, as opposed to that which is in support of internal Auxiliary activities. Prior to the 2017 Valuation Report, all 99 hours had been tabulated in Recreational Boating Safety but have since been broken out as described.

This report addresses an incorrect allocation in prior reports: Emergency Management (28) had been allocated to Mission Support instead of to Response & Prevention. Since this represents only about 0.2% of Auxiliary activity, this issue had no effect on prior aggregate results.

**Converting mission hours into labor costs**

The distribution of raw hours into the various components of Auxiliary activity at a fixed labor rate would not be GAAP-compliant because it would be independent of the skill levels (and the associated notional compensation) that would be required for each task. As noted in the Introduction, and in Appendix A of this report, a mapping to active-duty skill levels is required.

Standard personnel costs

In order to establish a financial metric for Auxiliary contribution to be used to contrast with the USCG financial investment in the Auxiliary, a set of Standard Personnel Costs is needed. This report uses COMDTINST 7310.1(series), *Reimbursable Standard Rates*. Updated periodically by CG-83, this source contains, among other things, hourly standard rates for vessels, aircraft and personnel. The current version is COMDTINST 7310.1W. Auxiliary labor is considered “internal to the government” for the purposes of this analysis and thus excludes unfunded retirement and medical costs charged for customer effort that is external to the government.

The hourly rates for those pay grades deemed to be applicable to Auxiliary work (other than codes 99A through E) are shown below:

<u>Officer equivalents</u>		<u>Enlisted equivalents</u>	
CDR	\$117	PO1	\$66
LCDR	\$105	PO2	\$58
LT	\$89	PO3	\$48
LTJG	\$72	SN	\$39
ENS	\$61		

Assignment of skill levels and costs for operations (all codes except 99)

For all operational activities, as reported on Form 7030, hours are allocated in AUXDATA II to LEAD, NON-LEAD, and TRAINEE. These provide great flexibility in assigning active-duty equivalencies.

Each operational mission category, listed in Table 1 can be assigned a rank/rate equivalency corresponding to the level of complexity of the work, including LEAD/NON-LEAD/TRAINEE distinctions.

A special case exists when there is a platform dependency as well. Participants in a surface Maritime Patrol mission are assigned Boatswains Mate equivalents, while those in an air Maritime Patrol mission are assigned commissioned officer equivalents. Thus, they must be broken out, considered separately, then aggregated. This only pertains to three mission categories: Maritime Patrol, Search and Rescue, and Government Support.

#### Assignment of skill levels and costs for Mission Code 99

It is not practical to retrieve individual 7029 hours from each and every member and sum them by office category. As a proxy, however, it is possible to calculate a weighted average cost for all elected and appointed officers to use in the valuation of 99a (Leadership) hours. Similarly, it is possible to calculate a weighted average cost for all members (officers included) to use in the valuation of the remainder of the 99 hours (99b through 99e).

Developing a weighted average implies the development of an arbitrary weighting factor. One cannot assign equal weight to the single RADM-equivalent National Commodore who may perform highly sophisticated work for 2,000 or more hours a year to the many thousands of Flotilla Staff Officers who may do less demanding work only 100 hours a year. If a weighting process were not applied, the 9,000+ members without elected or appointed office and the more than 6,000 FSOs would swamp the higher grades, causing the value of the NACO's time to be assigned a value similar to that of an active duty Ensign.

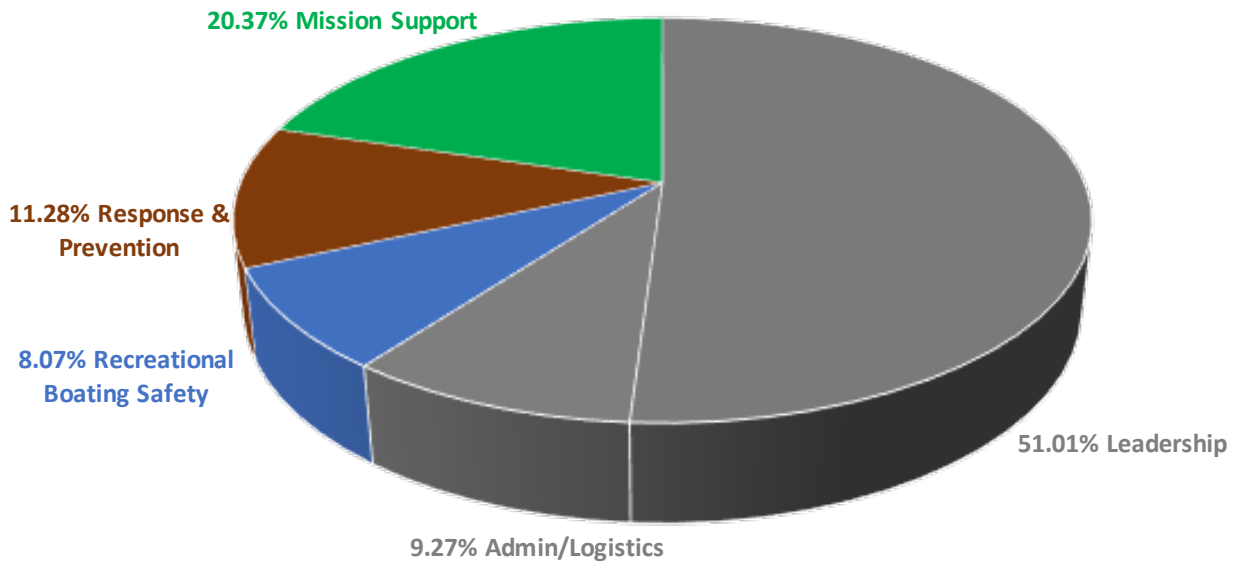
The mathematical details of the analysis associated with the weighting process are omitted here for brevity, but are contained in Appendix B. The result is that, for calendar year 2023, the average weighted cost for time spent by an elected or appointed officer (Code 99A) is \$86.92/hour. The comparable cost for time not associated with leadership (Codes 99b-e) is \$61.56/hour.

#### Summary of labor costs

From the AUXDATA II extract, an expanded spreadsheet has been created to reflect all of the LEAD/NON-LEAD/TRAINEE distinctions and the rank/rate equivalents (and the associated cost) to generate the overall labor cost, by principal mission area. The bottom-line data for 2023 are represented in the table and the pie chart that follow.

Mission category	Labor value	Leadership	Admin/Log	RBS	R&P	Msn Support
NS - Navigation Systems (30, 31, 32)	\$308,848				\$308,848	
MP - Maritime Patrol (01, 02, 03, 54A, 55A)	\$7,996,530				\$7,996,530	
CGADMIN - CG Administrative Support (08, 92)	\$7,685,925					\$7,685,925
CGOPS - CG Operational Support (07, 20, 22, 26)	\$6,372,053				\$6,372,053	
GOVSUP - Government Agency Support (41, 42, 43)	\$618,457				\$618,457	
HS - Health Services (93)	\$668,671					\$668,671
IA - International Affairs (60)	\$532,681				\$532,681	
ICE - Ice Operations (53)	\$16,928				\$16,928	
LEGAL - Legal Services (94)	\$382,814					\$382,814
LO - Legislative Outreach (65)	\$116,824			\$116,824		
MS - Marine Safety (70, 80)	\$2,837,464				\$2,837,464	
MT - Member Training (06)	\$1,761,044					\$1,761,044
NOMISS - No Mission Listed	\$0					
RBS - Leadership (99A)	\$92,845,113	\$92,845,113				
RBS - RBS Support (99B)	\$7,757,323			\$7,757,323		
RBS - Marine Safety (99C)	\$718,798				\$718,798	
RBS - Training Support (99D)	\$17,691,668					\$17,691,668
RBS - Admin/Logistics (99E)	\$16,866,955		\$16,866,955			
SAR - Search & Rescue (23, 24)	\$121,544				\$121,544	
UMDV - Marine Dealer Visits (11)	\$1,539,858			\$1,539,858		
UPA - Public Affairs (10)	\$7,553,602					\$7,553,602
UPE - Public Education (14)	\$2,351,161			\$2,351,161		
UREC - Recruiting Assistance (09, 90)	\$1,343,254					\$1,343,254
UEM - Emergency Management	\$1,010,478				\$1,010,478	
VSC - Vessel Safety Check (91)	\$2,926,886			\$2,926,886		
<b>TOTAL</b>	<b>\$182,024,878</b>	<b>\$92,845,113</b>	<b>\$16,866,955</b>	<b>\$14,692,052</b>	<b>\$20,533,780</b>	<b>\$37,086,978</b>
<b>PERCENTAGE</b>	<b>100%</b>	<b>51.01%</b>	<b>9.27%</b>	<b>8.07%</b>	<b>11.28%</b>	<b>20.37%</b>

**Table 2: Distribution of labor costs across principal mission areas in 2023**



**Figure 1: Distribution of labor costs across principal mission areas in 2023**



## Facility maintenance costs

Facility maintenance costs can be established by gathering a true cost of maintenance for each Standard Auxiliary Maintenance Allowance (SAMA) type, both air and surface. Subtracting the SAMA reimbursement from the true cost of maintenance, then summing across SAMA types, will yield the total out-of-pocket cash contributions from Auxiliary facility owners to the Coast Guard.

For aviation facilities, there is a reputable data source for maintenance cost: the Conklin & de Decker Aircraft Cost Evaluator. It is available only by paid subscription, but a limited extract was made available at no cost in 2019. These aviation numbers are used, inflated by 5% per year. The resultant costs are very much in line with both the aircraft reimbursement rates published by the Under Secretary of Defense (Comptroller) and the current Civil Air Patrol reimbursement rates for externally funded missions.

Based on that 2019 data, a weighted average true hourly cost of aircraft maintenance was calculated by using the airframe population at that time (104 facilities) in SAMA classes 1 through 8 as the weighting factor. After applying the inflation factor, the true weighted cost for 2023 is \$ \$171.94 per hour. The weighted average SAMA reimbursement, using the same airframe population, is unchanged at \$51.26. Thus, SAMA reimburses 29.8% of the true cost, which represents a \$120.68 out-of-pocket cost per flight hour to the Auxiliarist.

For surface facilities, no such reputable database exists. However, a weighted average SAMA reimbursement can be calculated as before by using a contemporaneous boat population in SAMA types A through I (881 facilities) and the surface SAMA reimbursements that were in force. Doing so yields a weighted average hourly SAMA of \$6.33. If the 29.8% aircraft factor is true for surface assets as well (an unproven, but not unreasonable, assumption), then the current average true hourly cost of maintaining a surface facility is \$21.24, which represents a \$14.91 out-of-pocket cost per underway hour to the Auxiliarist.

Applying these numbers, the result for 2023 is:

- 4,284 airborne hours @ \$120.68/hour = \$516,993
- 30,186 underway hours @ 14.91/hour = \$450,073

## Direct expenses and miles driven

Auxiliarist submissions to AUXDATA II contain the out-of-pocket expenses that an Auxiliarist incurs, as well as the number of miles in personal vehicles driven on Auxiliary business. The latter number is multiplied by the government reimbursement rate for CY2023 as shown in Internal Revenue Service Notice 2023-03. These 2023 expenses are direct contributions to the USCG since, had they been incurred by the active duty, they would have, in general, been reimbursed:

- Auxiliarist out-of-pocket expenses = \$974,448
- Auxiliarist travel 3,851,487 miles @ \$0.655/mile = \$2,522,724

## Coast Guard Academy

Newly added in 2023 is the fact that the Coast Guard Academy (CGA) benefits from the Auxiliary Academy Partners program where selected Auxiliarists with academic experience and good judgement conduct interviews with potential candidates for admission. The Academy keeps a record of the travel costs that were avoided by virtue of the existence of this program, thereby representing a direct savings to the Coast Guard. As of the publishing of this report, the 2023 data were not available, however our Academy Partners team and the CGA Admissions Office agree that the 2022 number was \$50,000, and that number is replicated here for 2023.

### Summary of results

Based upon the data elements previously noted, the contribution of the Auxiliary to the U.S. Coast Guard in 2023 is:

Equivalent labor	\$182,024,878
Air facility maintenance	\$ 516,993
Surface facility maintenance	\$ 450,073
Auxiliarist out-of-pocket	\$ 974,448
Auxiliarist auto mileage	\$ 2,522,724
Coast Guard Academy	\$ 50,000
	<hr/>
TOTAL	\$ 186,539,116

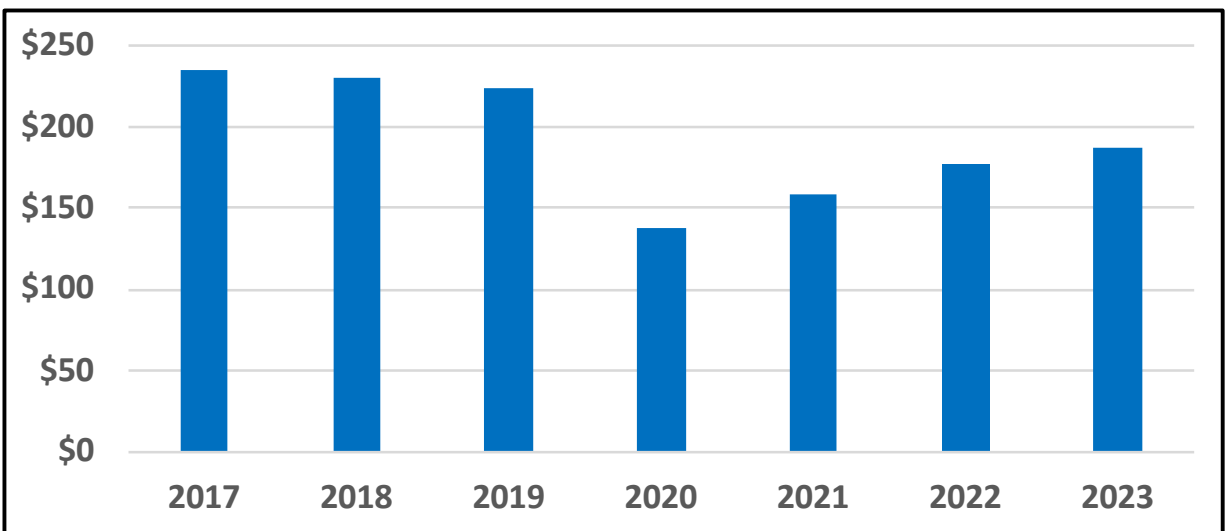
Since CG-BSX-1 reports that the USCG budgeted \$18,990,000 to fund the Auxiliary in FY23, then the USCG received, in return, \$9.82 for every \$1 expended.

## SECTION 3: Trend analysis

### Overall trends

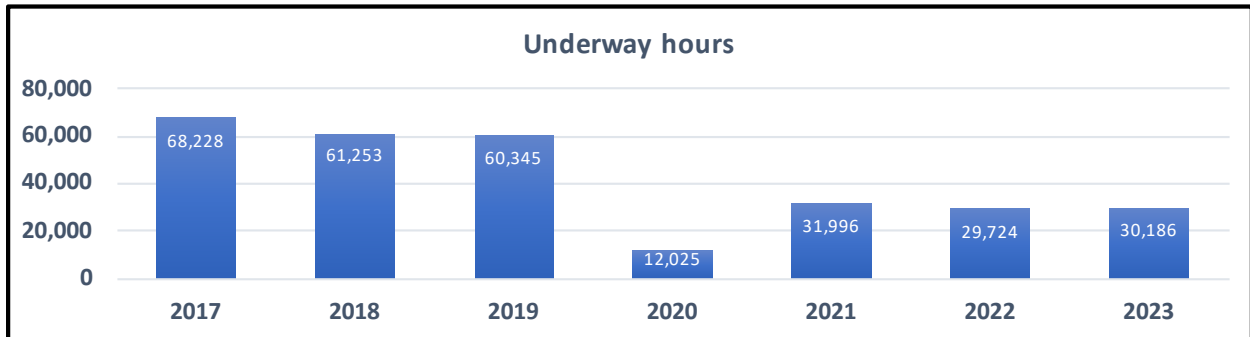
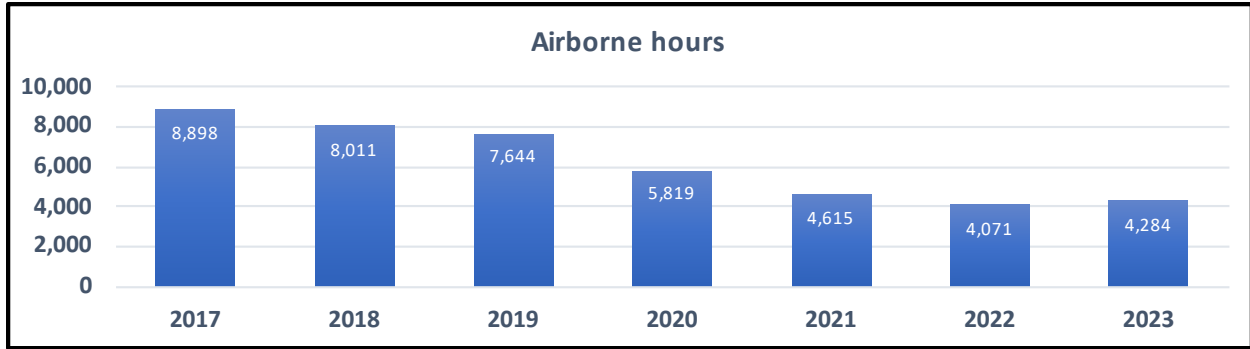
The disruptions engendered by the COVID pandemic that began in March 2020 are now largely behind us. ALAUX 04-23, issued on 20 Jan 2023, allowed resumption of normal activities, subject to a few minor local restrictions. ALAUX 07-23, issued on 31 Jan 2023, allowed the resumption of C-schools.

As shown in the chart below, the Auxiliary continues to incrementally recover from the COVID situation although it appears that it is asymptotically approaching a steady state that is somewhat lower than it might have been in the absence of COVID. However, some of the decline may also be attributed to the loss of about 2,000 members between 2020 and 2023.



**Figure 2: Auxiliary value to the USCG by year in \$M**

The operational hiatus beginning in 2020 did result in the expiration of qualifications for some members with an associated impact on actual operational hours (although these represent a small fraction of the overall hours). The diminution in airborne and underway hours in the charts which follow is particularly concerning because, unlike the modest overall loss, these seem to be stabilizing at a level approximately half of what they were pre-COVID.



### Trends from a Mission Area perspective

There now exists seven years of data, all collected with an identical methodology, concerning the distribution of Auxiliary activity among the three Principal Mission Areas plus overhead functions (99a + 99e). The data are presented in tabular form as Table 3 below. There is not a great deal of difference year-to-year but overhead is slowly returning to its pre-COVID norm of about 60%, RBS continues to recover from COVID, and Mission Support took a noticeable leap between 2022 and 2023. This is principally attributable to Coast Guard Administrative Support (Mission codes 08 and 92) increasing by a factor of 2.5, from \$3.1M to \$7.7M. This is likely due to increasing emphasis on augmentation activities in response to Coast Guard needs.

	<b>99a + 99e</b>	<b>R&amp;P</b>	<b>RBS</b>	<b>MS</b>
<b>2017</b>	59.6%	14.7%	10.8%	14.9%
<b>2018</b>	59.7%	13.8%	10.7%	15.8%
<b>2019</b>	61.9%	12.4%	10.0%	15.6%
<b>2020</b>	67.0%	8.9%	5.9%	18.2%
<b>2021</b>	62.6%	12.6%	7.3%	17.5%
<b>2022</b>	62.3%	13.0%	7.8%	16.9%
<b>2023</b>	60.3%	11.3%	8.1%	20.3%

**Table 3: Labor distribution among Principal Mission Areas**

# Appendix A: Background and Analytic Framework

## History

There have been at least two early attempts at Auxiliary valuation; these have been helpful in realizing that there is measurable value in Auxiliary volunteer labor and that the USCG's Return on Investment is likely to be sizable.

A 2010 paper<sup>1</sup>, written by the then-DIRAUX of District 11-North, was the first valuation of the Auxiliary. This work relied on a fixed value of a volunteer labor hour provided by the "Independent Sector," a leadership forum of charities, foundations and corporate giving programs, to derive a valuation estimate. The agreed-upon number in 2009 was \$20.25 per hour, or \$42,120 per annum. In addition, this work evaluated "maritime property saved," a metric that does not accrue directly to the USCG but, nonetheless, represents a real contribution to the civic life of the country.

A 2012 Master's degree thesis<sup>2</sup> for the Naval Postgraduate School, written by an officer then in CG-BSX-1, contributed to the valuation effort by emphasizing a quantification of the value of labor vis a vis the investment of administration to support that labor. His analysis also used a fixed common labor rate for volunteers that was equal to a civilian GS-9, Step 1: \$19.92 per hour, or \$41,434 per annum.

Unfortunately, these previous studies, valuable as they may have been, did not meet the methodological or reporting requirements of GAAP as found in Federal Accounting Standard (FAS) 116, nor did they provide the uniformity and comparability of the Full Time Equivalent (FTE) metric most useful to USCG decision makers, i.e., a direct mapping of volunteer labor skills and value to comparable active-duty skills and compensation.

In 2014, Dr. Matthew Carter, then a Division Chief in the Performance Measurement Directorate, conducted a scholarly analysis of the measurement of volunteer labor that appeared in each of his Auxiliary valuation reports in 2014, 2015 and 2016. His basic framework allows for the resultant analytical product to be considered GAAP-compliant, and a distillation of his theoretical framework is provided in this Appendix. All reports from 2017 onward continue to be GAAP-compliant as before, but are constructed in the context of a documented and repeatable audit trail, using available and approved current data.

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<sup>1</sup> Chareonsuphiphat, D. (2010). Return on Investment, The Value of the U.S. Coast Guard Auxiliary. Proceedings of the Marine Safety & Security Council, 73-75.

<sup>2</sup> Barner, M. (2012). The Future Mission Tasking and Resourcing of the U.S. Coast Guard Auxiliary. Monterey, CA: Naval Postgraduate School.

## Measurement of volunteer labor

Other organizations that rely on and measure the value of volunteer labor employ one of three measurement methods: the social benefit approach<sup>3</sup>, the opportunity cost approach<sup>4</sup>, or the replacement cost approach<sup>5</sup>. The social benefit approach measures the output value of volunteer labor, while the opportunity cost and replacement cost approaches measure the input value of volunteer labor<sup>6</sup>.

Each approach can use either observed or declared market proxies for their variables. The opportunity cost approach can rely on an observed alternative-employment wage rate or an expert-declared volunteer wage rate. The replacement cost approach can use either an observed replacement wage or declared wage amount based on management judgment. The social benefit approach can either use the observed fair market value of equivalent goods and services or the declared judgment of the beneficiary of the goods and services<sup>7</sup>.

All these approaches rely on five primary variables to report on volunteer labor: the number of volunteers and volunteer labor hours, the skill and occupational nature of the work performed, and the industry and institutional setting in which that volunteer labor is donated. The management information system of organizations measuring the value of their volunteer labor should capture and provide these key variables to fully use one of these three measurement strategies.

GAAP requires that volunteer labor be measured at fair market value (FAS 16). The two input-based measurement approaches make conforming to GAAP standards considerably easier than the output-based social benefit approach. The replacement cost approach is “the consensus [choice] among researchers in the field” as the “most reasonable method for estimating the economic value of volunteer inputs.”<sup>8</sup>

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<sup>3</sup> Begona, A.-F., Hanley, N., and Barberan, R. (2001). The Value of Leisure Time: A Contingent Rating Approach. *Journal of Environmental Planning and Management*, 44(5), 681-699.

<sup>4</sup> Brown, E. (1999). Assessing the Value of Volunteer Activity. *Nonprofit and Voluntary Sector Quarterly*, 28(3), 3-17.

<sup>5</sup> Mook, L., Handy, F., Ginieniewicz, J., and Quarter, J. (2007). The Value of Volunteering for a Nonprofit Membership Association: The Case of ARNOVA. *Nonprofit and Voluntary Sector Quarterly*, 36(3), 504-520.

<sup>6</sup> International Labour Office. (2011). *Manual on the Measurement of Volunteer Work*. Geneva: International Labour Office.

<sup>7</sup> Salamon, L., Sokolowski, S., and Haddock, M. (2011). Measuring the Economic Value of Volunteer Work Globally: Concepts, Estimates, and a Roadmap to the Future. *Annals of Public and Cooperative Economics*, 82(3), 217-252.

<sup>8</sup> International Labour Office. (2011). *Manual on the Measurement of Volunteer Work*. Geneva: International Labour Office, page 36

Given that Auxiliary information systems do capture these variables and that USCG active-duty observable equivalents exist for Auxiliary volunteer labor, this valuation will rely on observable input-based variables. Further, given the USCG's internal reporting goals of consistent and reliable side by side comparability, the replacement cost method of measurement was used in the valuation.

The replacement cost method establishes the true value of volunteer labor as the fair market value of equivalent paid labor<sup>9</sup>. "To begin the economic assessment of volunteer labor, the market value of a nonpaid position is set at the annual salary for the beginning level of the equivalent job classification grade. If volunteers fill several agency jobs, a parallel paid position must be established for each one"<sup>10</sup>.

Notwithstanding its status as the industry-standard and GAAP-approved<sup>11</sup> method for measuring the value of volunteer labor, the replacement cost approach is criticized for two potential weaknesses: the "hypothesized differences in skill and efficiency between a volunteer and a paid employee essentially doing the same job" and "the differences in wage rates for similar work in different institutional settings (nonprofit organizations, government and for-profit businesses.)"<sup>12</sup>

Because the Auxiliary shares the same institutional setting as the rest of the USCG, the second potential weakness does not exist. To accommodate the first potential weakness, this valuation will take the specialist replacement approach within the replacement cost measurement method, which asserts that paid labor can perfectly substitute for the volunteer labor being measured. The specialist approach is "very precise and likely to result in the most accurate estimate" of replacement costs, although it requires a considerable amount of effort to map volunteer tasks to equivalent paid labor tasks<sup>13</sup>. The office of the Chief Director (CG-BSX-1) provided guidance in determining these equivalencies.

In 1978, the Financial Accounting Standards Board (FASB) established four criteria that must be present for the value of volunteer labor to be included in financial statements and reporting:

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<sup>9</sup> Karn, G. (1982). Money Talks: A guide to establishing the true dollar value of volunteer time (Part I). *Voluntary Action*, 1(2), 1-17.

<sup>10</sup> Brudney, J. (1990). *Fostering Volunteer Programs in the Public Sector: Planning, Initiating, and Managing Voluntary Activities*. San Francisco: Jossey-Bass.

<sup>11</sup> Mook, L., Richmond, B., and Quarter, J. (2001). Calculating the value of volunteer contributions for financial statements. *The Philanthropist*, 18(1), 71-83.

<sup>12</sup> International Labour Office. (2011). *Manual on the Measurement of Volunteer Work*. Geneva: International Labour Office. p.36

<sup>13</sup> Mook, L., and Quarter, J. (2003). *How to Assign a Monetary Value to Volunteer Contributions*. Toronto: The Canadian Centre for Philanthropy.

1. The value must be measurable;
2. The organization must manage its volunteers similarly to its employees;
3. The volunteer labor services must be part of the organization's normal work that would otherwise need to be purchased; and
4. The volunteer labor services must be for public benefit rather than the benefit of the organization's own members.

In 1993, FAS 116 was issued by FASB to regulate the value of contributed services like volunteer labor as reported on statements "for internal and external purposes, grant proposals, and annual reports" (FAS 116). FAS 116 allows the recognition of the value of volunteer labor in financial reporting if either:

1. The service provided by a volunteer either creates or enhances a nonfinancial asset like equipment or buildings
2. The service requires specialized skills, is provided by individuals with those skills, and would otherwise need to be purchased<sup>14</sup>.

The value of the volunteer labor for GAAP is its observed fair market value, either as purchased or as a wage. Auxiliary volunteer labor clearly satisfies all these criteria and is therefore eligible to be valued and presented within USCG financial reporting.

### **The concept of "equivalency"**

The preceding section establishes that, in order to be GAAP-compliant and FAS 116-compliant, the valuation of a volunteer's time has to be treated in the same manner as an active-duty member's time. This necessitates that each level of Auxiliary qualification, or elected or appointed office, must be assigned a corresponding rank (officer equivalents) or rate (enlisted equivalents), with the process also including members having neither qualification nor office.

A table of equivalencies was originally approved by CG-BSX-1 in 2014 and, in 2017, expanded to be fully comprehensive. The term "equivalency," as used in this report, indicates only that the Auxiliarist possesses skills or responsibilities comparable to those typically held by a member of the Coast Guard holding the corresponding rank or rate. For this reason, in the consideration of equivalencies in elected or appointed office, there is not a one-to-one correspondence between the Auxiliarists insignia of office and the rank/rate insignia of the assigned equivalent. Furthermore, it does not in any way suggest that the Auxiliarist should be considered as holding that equivalent pay grade. To do so would be inconsistent with 33 CFR §5.14(a) "Auxiliary uniform insignia do not indicate rank in any military service or government agency."

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<sup>14</sup> Zietlow, J., Hankin, J., and Seidner, A. (2007). *Financial Management for Nonprofit Organizations*. Hoboken: John Wiley & Sons.



## APPENDIX B: Valuation of 99 hours

The process of developing a weighted average is complicated and, thus, relegated to this Appendix to avoid undue complexity in the body of this report.

The fundamental problem is that the distribution of 99 hours among Auxiliary elected and appointed officers and other members cannot be measured accurately and, in some cases, a member holds multiple roles simultaneously. With perfect knowledge, the hours could simply be multiplied by the hourly cost and summed. In the absence of that knowledge, another technique must be employed to distribute hours across rank-equivalents.

We do know, empirically, that the more senior a position the elected or appointed officer holds, the more likely he/she is to work full-time (or more!) on Auxiliary business. We also know that, on the other end of the scale, a very sizeable contingent contributes little. In between, we know that the average ENS-equivalent officer contributes fewer hours to the Auxiliary than members holding higher rank-equivalents. Therefore, a set of raw weighting factors were heuristically devised to capture the elements being weighted (in this case, notional work content). The actual applied weights must be subject to the condition that the total number of 99a hours is constrained to that reported in AUXDATA, viz., 1,068,182 hours. This can be done by utilizing a Goal Seek function, embedded in Excel, that can compute an applied weight that maintains the same ratio as the raw weight, while satisfying the boundary constraint that the sum of all 99a hours must match that reported.

The mathematical underpinnings of the process are shown in the shaded area below, using 99a (Leadership) as an example, and captured in the spreadsheet that follows.

In order to develop the weighted average cost,

- let  $i$  be the index that cycles through the 8 steps from ENS to RADM rank-equivalency
- let  $N_i$  be the number of rank-equivalent members assigned to the  $i^{\text{th}}$  rank-equivalent
- let  $W_i$  be the applied weight assigned to the members holding the  $i^{\text{th}}$  rank-equivalent
- let  $\$i$  be the hourly cost associated with the  $i^{\text{th}}$  rank-equivalent

Then, the weighted average cost across all rank-equivalents, denoted  $\bar{\$}$  is:

$$\bar{\$} = \frac{\sum_{i=ENS}^{RADM} N_i W_i \$i}{\sum_{i=ENS}^{RADM} N_i W_i}$$

Office	Equivalent	Number
<b>National Staff</b>		
NACO	RADM	1
VNACO	RDML	1
DNACO	RDML	4
ANACO	CAPT	9
N-staff/ANACOD	CDR	59
DIR	CDR	19
DIRd	LCDR	20
DVC	LCDR	92
BC	LT	293
BA	LTJG	196
<b>Districts/Regions</b>		
DCO	CAPT	16
DCOS	CDR	16
DCAPT	CDR	48
DSO	LCDR	324
ADSO	LT	674
DCDR	LCDR	156
VCDR	LT	152
SO	LTJG	1932
FC	LTJG	689
VFC	ENS	643
FSO	ENS	5877
Member	PO3	8663
all officers		11221
all members		19884

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Equivalent Rank	Number	Hourly Cost	Raw 99a Weight	Applied 99a Weight	Raw 99b-e Weight	Applied 99b-e Weight	Weighted 99a Hours	Weighted 99b-e Hours	Weighted 99a-e Hours	99a Cost Total	99b-e Cost Total	Weighted 99a Number	Weighted 99b-e Number
RADM	1	157.00		1.000		0.00	2,080	0	2,080	\$157	\$0	1.0	0.0
RDML	5	144.00		1.000		0.00	10,400	0	10,400	\$720	\$0	5.0	0.0
CAPT	25	135.00	30	0.609	1	0.006	31,644	308	31,953	\$2,054	\$20	15.2	0.1
CDR	142	117.00	20	0.406	2	0.012	119,827	3,501	123,328	\$6,740	\$197	57.6	1.7
LCDR	592	105.00	10	0.203	2	0.012	249,780	14,597	264,377	\$12,609	\$737	120.1	7.0
LT	1119	89.00	3	0.061	3	0.018	141,641	41,386	183,027	\$6,061	\$1,771	68.1	19.9
LTJG	2817	72.00	2	0.041	3	0.018	237,713	104,187	341,901	\$8,229	\$3,606	114.3	50.1
ENS	6520	61.00	1	0.020	4	0.024	275,096	321,525	596,621	\$8,068	\$9,429	132.3	154.6
PO3	4331.5	48.00		0.000	4	0.024	0	213,602	213,602	\$0	\$4,929	0.0	102.7
Inactive		0.00		0.000		0.00	0	0	0	\$0	\$0	0.0	0.0
<b>Total</b>	<b>19884</b>						<b>1,068,182</b>	<b>699,107</b>	<b>1,767,289</b>	<b>\$44,637</b>	<b>\$20,690</b>	<b>513.5</b>	<b>336.1</b>
										\$86.92 >> weighted average 99a hourly cost \$61.56 >> weighted average 99b-e hourly cost			

Goal seek for 99a: make N16 match total 99a hours by changing K13  
 Goal seek for 99b-e: make O16 match total 99b-e hours by changing L8

Column 1-3: the equivalent rank, number of Auxiliary officers rated at that equivalent-rank, and their hourly cost. For members that are not elected or appointed officers, half are considered to be third class petty officer-equivalent, and the other half are considered inactive.

Columns 4-5: these apply to elected and appointed officers only. The raw relative weights in column 4 relate the relative time consumption of the job content and grows with rank-equivalence. For example, a LT-equivalent (e.g., an ADSO or BC) would expend three times the effort as an ENS-equivalent (e.g., an FSO), while a CAPT-equivalent (e.g., DCO or ANACO) would expend three times that of LCDR-equivalent (e.g., DCDR or DVC). The most senior leadership (NACO/VNACO/DNACO) are assumed full time. The applied weights in column 5 are obtained by using the “Goal Seek” function in Excel to maintain the assumed ratios while forcing the sum of 99a hours to match the number in AUXDATA (1,068,182).

Columns 6-7: these apply to all members. The raw relative weights in column 6 relate to Code 99 time that is not in pursuit of leadership activities, i.e., Codes 99b through 99e, and diminish as rank-equivalence increases. The logic is that the less senior members (including those without elected or appointed office) will be more likely to be involved in training, marine safety, RBS, etc. than their more senior colleagues who are typically consumed with their leadership responsibilities. The applied weights in column 7 are obtained by using the “Goal Seek” function in Excel to maintain these ratios while forcing the sum of 99b-e hours to match the number in AUXDATA (699,107).

Columns 8-9: these are the number of work hours, computed by multiplying the number of members at a rank-equivalent (column 2) by 2,080 hours/year, by the applied weight in either column 5 (for 99a) or 7 (for 99b-e).

Column 10: the sum of columns 8 and 9.

Columns 11-12: the weighted cost per rank-equivalent. Computed by multiplying the number of members of a given rank-equivalent (column 2) by their respective hourly cost (column 3) by the applied weight (column 5 for 99a or column 7 for 99b-e). The total across all rank equivalents is at the bottom.

Columns 13-14: the weighted number of members per rank-equivalent. Computed by multiplying the number of members of a given rank-equivalent (column 2) by the applied weight (column 5 for 99a or column 7 for 99b-e). The total across all rank equivalents is at the bottom.

In the lower right hand corner, the weighted average hourly cost for 99a is the column 11 total divided by the column 13 total, and the weighted average hourly cost for 99b-e is the column 12 total divided by the column 14 total.

The weighted average cost for officers (99a) is \$86.92, almost that of a LT; the weighted average for all members (99b through 99e) is \$61.56, a little more than an ENS.