AMERICAN CHEMICAL SOCIETY

Consolidated Financial Statements

December 31, 2022 and 2021

(With Independent Auditors' Report Thereon)

KPMG LLP
Suite 12000
1801 K Street, NW
Washington, DC 20006

Independent Auditors' Report

Board of Directors
American Chemical Society:

Opinion

We have audited the consolidated financial statements of American Chemical Society and its subsidiary (the Society), which comprise the consolidated statements of financial position as of December 31, 2022 and 2021, and the related consolidated statements of activities and cash flows for the years then ended, and the related notes to the consolidated financial statements.

In our opinion, the accompanying consolidated financial statements present fairly, in all material respects, the financial position of the Society as of December 31, 2022 and 2021, and the change in its net assets and its cash flows for the years then ended in accordance with U.S. generally accepted accounting principles.

Basis for Opinion

We conducted our audits in accordance with auditing standards generally accepted in the United States of America (GAAS). Our responsibilities under those standards are further described in the Auditors' Responsibilities for the Audit of the Consolidated Financial Statements section of our report. We are required to be independent of the Society and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements relating to our audits. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Responsibilities of Management for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with U.S. generally accepted accounting principles, and for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, management is required to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about the Society's ability to continue as a going concern for one year after the date that the consolidated financial statements are issued.

Auditors' Responsibilities for the Audit of the Consolidated Financial Statements

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with GAAS will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the consolidated financial statements.

In performing an audit in accordance with GAAS, we:

- Exercise professional judgment and maintain professional skepticism throughout the audit.
- Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Society's internal control. Accordingly, no such opinion is expressed.
- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the consolidated financial statements.
- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about the Society's ability to continue as a going concern for a reasonable period of time.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings, and certain internal control related matters that we identified during the audit.

KPMG LLP

Washington, District of Columbia
March 3, 2023

AMERICAN CHEMICAL SOCIETY

Consolidated Statements of Financial Position

December 31, 2022 and 2021

(In thousands)

Assets		**2022**	**2021**
Cash and cash equivalents	$	53,533	89,008
Accounts receivable, net		71,222	60,205
Investments		1,421,166	1,655,659
Buildings, land, and other property, net		125,445	127,843
Postretirement benefits and other		50,342	53,520
Total assets	$	1,721,708	1,986,235
Liabilities and Net Assets			
Accounts payable	$	33,193	31,279
Accrued expenses		58,240	57,695
Deferred revenues		150,507	145,545
Grants payable		787	1,245
Long-term debt		60,354	60,346
Postretirement benefits and other		55,801	71,772
Total liabilities		358,882	367,882
Net assets without donor restrictions:			
ACS programs		628,860	716,511
Total net assets without donor restrictions		628,860	716,511
Net assets with donor restrictions:			
ACS programs		132,544	159,394
PRF		601,422	742,448
Total net assets with donor restrictions		733,966	901,842
Total net assets		1,362,826	1,618,353
Total liabilities and net assets	$	1,721,708	1,986,235

See accompanying notes to consolidated financial statements.

AMERICAN CHEMICAL SOCIETY

Consolidated Statements of Activities

Years ended December 31, 2022 and 2021

(In thousands)

		2022	2021
Change in net assets without donor restrictions from operations:			
Operating revenues:			
Electronic and other information services	$	667,336	614,468
Net assets released from restriction		26,258	19,356
Appropriation from general fund and investment income		20,236	17,062
Member insurance premiums, refunds, and fees		10,993	11,940
Dues		7,023	8,774
Registration fees and booth sales		7,849	2,545
Other		11,636	11,529
Total operating revenues		751,331	685,674
Operating expenses:			
Program activities:			
Information services		524,903	390,510
Membership and society services		31,868	25,131
Education		17,400	13,840
Member insurance program		13,900	13,410
External affairs and communication		25,142	19,894
Scientific advancement		23,804	13,758
Supporting activities:			
Finance, administration and human resources		35,859	58,537
Information technology		5,077	41,643
Marketing and promotion		8,142	28,421
Total operating expenses		686,095	605,144
Change in net assets without donor restrictions from operations		65,236	80,530
Non-operating activities:			
Net investment (losses) gains		(158,681)	61,132
Change in postretirement benefits obligations		5,794	(13,822)
Change in net assets – non-operating activities		(152,887)	47,310
Change in net assets without donor restrictions		(87,651)	127,840
Change in net assets with donor restrictions:			
Contributions		4,843	4,149
Net investment (losses) gains and income		(146,461)	76,363
Net assets released from restriction		(26,258)	(19,356)
Adjustment of pledges receivable		—	(129)
Change in net assets with donor restrictions		(167,876)	61,027
Change in net assets		(255,527)	188,867
Beginning net assets		1,618,353	1,429,486
Ending net assets	$	1,362,826	1,618,353

See accompanying notes to consolidated financial statements.

AMERICAN CHEMICAL SOCIETY

Consolidated Statements of Cash Flows

Years ended December 31, 2022 and 2021

(In thousands)

		2022	2021
Cash flows from operating activities:			
Change in net assets	$	(255,527)	188,867
Adjustments to reconcile change in net assets to net cash provided by operating activities:			
Net investment losses (gains)		303,831	(125,639)
Change in postretirement benefits obligations		(5,791)	13,822
Depreciation and amortization		37,122	34,796
Contributions restricted for long-term investment		(1,476)	(728)
Net loss on property dispositions		310	166
Amortization of debt issuance cost		9	9
Changes in operating assets and liabilities:			
(Increases) decreases in assets:			
Accounts receivable, net		(9,255)	(2,495)
Other assets		(3,366)	7,173
Increases (decreases) in liabilities:			
Accounts payable		1,908	1,913
Accrued expenses		223	3,212
Deferred revenues		749	(2,652)
Grants payable		(458)	(2,459)
Other liabilities		(3,524)	(16,493)
Net cash provided by operating activities		64,755	99,492
Cash flows from investing activities:			
Purchases of investments		(866,334)	(287,727)
Sales and maturities of investments		799,384	227,950
Acquisitions of buildings, land, and other property		(34,756)	(29,249)
Net cash used in investing activities		(101,706)	(89,026)
Cash flows from financing activities:			
Contributions restricted for long-term investment		1,476	728
Net cash provided by financing activities		1,476	728
Net change in cash and cash equivalents		(35,475)	11,194
Beginning cash and cash equivalents		89,008	77,814
Ending cash and cash equivalents	$	53,533	89,008

See accompanying notes to consolidated financial statements.

(1) Organization and Purpose

The American Chemical Society (ACS or the Society) was founded in 1876. It is a U.S. not-for-profit corporation whose national charter was approved by the U.S. Congress on August 25, 1937. The Society's consolidated financial statements include the operations of its wholly owned for-profit subsidiary and an insurance trust. The Society was organized for the purposes of encouraging the advancement of chemistry, promoting research in chemical science, increasing, and diffusing chemical knowledge, and promoting scientific interests and inquiry through its meetings, reports, papers, and publications. The Society has more than 173,000 members.

The Society is generally exempt from federal income tax under Section 501(c)(3) of the Internal Revenue Code and accomplishes its exempt purpose through a number of educational meetings that provide forums for sharing scientific information, employment services, and public outreach. In addition, the Society provides expert testimony at the federal, state, and local government levels on topics relevant to the chemistry enterprise. The Society also provides a significant service to its members and the chemistry enterprise in the form of print and electronic scientific journals and databases pertaining to chemical and related scientific information.

The principal sources of funding for the Society's activities include net revenues generated by the Publications Division (Publications) and CAS, collectively, Electronic and Other Information Services Revenue. Publications publishes a wide range of peer-reviewed scientific journals, periodicals, and books which are available to members and subscribers. CAS analyzes, organizes, and shares scientific information that drives discovery, providing innovative solutions that empower scientists, patent information professionals, and business leaders worldwide. Other sources of the Society's revenue include investment income, member dues, insurance premiums, registration fees, and contributions from individuals and institutions to support Society programs. Products and services are sold domestically and in overseas markets, principally in Europe and Asia. The Society's diverse clientele is composed of its members and other chemistry-related practitioners, corporations, academic institutions, and government agencies.

(2) Summary of Significant Accounting Policies

(a) Principles of Presentation and Consolidation

The accompanying consolidated financial statements include the accounts of American Chemical Society and ACS International, Ltd., a wholly owned international marketing services subsidiary. The consolidated financial statements also include the accounts of the American Chemical Society Petroleum Research Fund (PRF), an endowment fund established to advance scientific education and research in the petroleum field, and the American Chemical Society Insurance Trust, a grantor trust established to enable members of the Society to purchase insurance coverage through group insurance policies. All significant inter-entity transactions have been eliminated. The assets and liabilities in the consolidated statements of financial position are presented in order of liquidity with the exception of investments, which have certain components that are considered short-term and others that are considered long-term (See Note 4). The accounts of the Society's chapters, referred to as local sections and divisions, are not included in the Society's consolidated financial statements because the Society does not have either a financial or governing controlling interest in its chapters.

(b) Net Asset Classes

Based on the existence or absence of donor-imposed restrictions, resources are classified into two categories: without donor restrictions and with donor restrictions.

- Net assets without donor restrictions are free of donor-imposed restrictions. All revenues, gains, and losses that are not restricted by the donor are included in this classification. All expenses are reported as decreases in net assets without donor restrictions.
- Net assets with donor restrictions are subject to donor-imposed restrictions that will be met either by actions of the Society or the passage of time. These net assets include donor restricted endowments and unconditional pledges. Generally, the donor-imposed restrictions of these assets permit the Society to use all, or part of the income earned on the related investments for general or specific purposes.

(c) Operating Measure

Operating results (change in net assets without donor restrictions from operations) in the consolidated statements of activities reflect all transactions that change net assets without donor restrictions. Non-operating activities without donor restrictions include net investment gains and losses, change in postretirement benefits obligations, and other non-operating gains and losses, if any.

(d) Use of Estimates

The preparation of the consolidated financial statements, in conformity with U.S. generally accepted accounting principles, requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the date of the consolidated financial statements, and the reported amounts of revenues and expenses during the reporting period. The Society's most significant estimates include actuarial assumptions for postretirement benefits obligations and useful lives of buildings and other property. Actual results could differ from these estimates.

(e) Cash Equivalents

Cash equivalents include money market funds which can be liquidated on a daily basis. These money market funds invest primarily in short-term U.S. Treasury securities, other short-term highly liquid investments, and certain fixed income securities. Cash equivalents that are managed as part of investments are reported within investments, as these funds are not used for daily operating needs. These are not considered cash equivalents or restricted cash equivalents for purposes of the statements of cash flow.

(f) Investments

Investments are reported at fair value in the consolidated statements of financial position. Certain commingled trust funds, hedge funds, private real estate funds, private equity funds, and a private credit fund are reported at net asset value (NAV) as a practical expedient for fair value unless it is probable that all or a portion of the investment will be sold for an amount different than NAV. Fair values of certain commingled funds, similar to mutual funds, that are deemed to have a readily determinable fair value are measured at published NAV. The net asset values are provided by external investment managers and involve assumptions and estimation methods; therefore, the estimates could differ materially from actual results. The Society reviews and evaluates the values provided by the

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investment managers and agrees with the valuation methods and assumptions used in determining the net asset values. Certain investments reported at NAV are subject to withdrawal restrictions and are less liquid than the Society's other investments. As of December 31, 2022, and 2021, the Society had no plans or intentions to sell investments at amounts different from NAV.

The Society invests in various instruments including domestic and foreign equities, fixed income securities, and financial derivatives. Investments, in general, carry various risks such as interest rate, credit, currency, liquidity, and overall market risk. Due to the level of risk associated with certain investments, it is reasonably possible that changes in the values of investments may occur in the near term, and such changes could materially affect the amounts reported in investments.

The Society has authorized its investment managers to utilize various derivative instruments, including financial futures, options, interest rate swaps, and credit default swaps to either hedge risk or alter the exposure to certain asset classes. The Society has established procedures to monitor and manage the use of these derivative instruments and the related market, interest, and counterparty credit risks. Derivative instruments are recognized at fair value using quoted market prices for similar instruments and are reported within investments in the consolidated statements of financial position.

The Society's investment managers may purchase and sell securities on a delayed delivery ("TBA securities"), when issued, or forward commitment basis. Settlements may take place one month or more after the date of the transaction. The underlying securities are valued at current market value with daily fluctuations in the market value included in net investment gains and losses. The Society has established procedures to monitor and manage the use of TBA securities and the related market, interest, and counterparty credit risks. Sufficient cash or liquid securities are held to cover its commitments. Losses may arise due to changes in the market value of the underlying securities or if the counterparty does not perform under the contract, or if the issuer does not issue the securities due to political, economic or other factors.

Changes in fair value are recognized as net investment gains or losses in the consolidated statements of activities. Investment income, net of related investment expenses, consisting of interest and dividends, is recognized when earned. Purchases and sales of investments are recorded on the trade date. Unsettled transactions, including forward purchases and sales of TBA securities or derivatives, that are managed as part of investments are reported within investments as the funds related to the settlements of such transactions stay within the investment pools and are not used for operating purposes.

(g) Foreign Currency Forward Contracts

The Society recognizes foreign currency contracts (not related to its investment portfolios) as either accounts receivable, accounts payable, or deferred revenue in the consolidated statements of financial position at their respective fair values. The fair values of foreign currency forward contracts are based on quoted market prices for similar contracts at December 31. Changes in fair value are recognized as net investment gains or losses in the consolidated statements of activities.

(h) Fair Value Measurements

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date.

The fair value measurement standard establishes a three-tier fair value hierarchy that prioritizes the inputs used in measuring fair value. The standard requires that assets and liabilities carried at fair value be classified and disclosed in one of the following three categories:

- Level 1 – Observable inputs such as quoted or published prices in active markets for identical assets or liabilities (e.g., U.S. Treasury issues, equities, and mutual funds traded on major exchanges)
- Level 2 – Inputs other than quoted or published prices in active markets for identical assets or liabilities that are observable either directly or indirectly, such as interest rates, yield curves, and quoted prices in active markets for similar assets or liabilities (e.g., U.S. government and agency issues, corporate bonds, money market funds, commingled funds with published prices, that may not trade actively, and foreign exchange forward contracts)
- Level 3 – Unobservable inputs in which there is little or no market data, requiring the reporting entity to develop its own assumptions

The Society utilizes the best information available in measuring fair value, and financial assets and liabilities are classified based on the lowest level of input that is significant to the fair value measurement.

See Note 4 for the disclosure of the fair value of applicable financial assets and liabilities measured on a recurring basis.

(i) Buildings, Land and Other Property

Buildings and other property are carried at cost less accumulated depreciation and amortization. Improvements that extend the estimated useful life of an asset are capitalized. Internally developed software is capitalized in accordance with the Financial Accounting Standards Board's (FASB) Accounting Standards Codification (ASC) Subtopic 350-40, *Internal-Use Software* and ASC Subtopic 350-50, *Website Development Costs*. Software that will be included in a product or service or developed for resale purposes is recorded in accordance with ASC Subtopic 985-20, *Costs of Software to Be Sold, Leased, or Marketed*.

Assets are amortized on a straight-line basis over the useful life of the asset. One-half year's depreciation or amortization is taken in the year an asset is placed in service. Useful lives range from 3 to 7 years for software; 3 to 45 years for buildings and improvements; and 3 to 10 years for hardware, furniture, and equipment. Repairs and maintenance costs are charged to expense as incurred.

(j) Long-Lived Assets

Long-lived assets are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable.

(k) Member Insurance Program

The Society maintains a separate Member Insurance Program, overseen by The Trustees of the Group Insurance Plans for ACS Members (the Trust), which provides members the ability to apply for insurance coverage through several group insurance plans. Ongoing insurance offerings include annual renewable term life, ten-and twenty-year level term life, accidental death and dismemberment,

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long term disability income, excess major medical, auto, homeowners, professional liability insurance, chemical educators' legal liability coverage and pet insurance. Health insurance, supplemental Medicare and long-term care are available through a brokerage service. Insurance carriers underwrite these policies while third party administrators handle the processing and administration of claims.

The Trust generates revenue from premiums received from program participants, refunds from the insurance carrier based on favourable claims experience, endorsement fees, interest and dividends earned on investments, and interest income earned on reserves held by the insurance carrier to ensure the stability of the program. The Trust's expenses include the cost of purchasing group insurance policies, as well as the cost of administering the program. The activities of the Trust are included within ACS Programs in the consolidated statements of activities.

(l) Revenue Recognition and Deferred Revenue

The Society's significant revenue streams are as follows:

(i) Electronic and Other Information Service Revenue

Electronic and other information service revenue consists primarily of CAS data and information licenses as well as Publications' subscriptions.

Revenue is measured based on the consideration specified in the contract with the customer. The Society recognizes revenue when it satisfies a performance obligation by transferring control of a product or service to a customer, which generally occurs over time. License and subscription terms are generally one year. Certain agreements with customers may include multi-year pricing however, based on the terms of such license agreements, the Society has defined the period of performance to be 12 months. The fees negotiated may be invoiced monthly, quarterly or annually.

Revenue from the sale or license of electronic services (data and information) is recognized ratably over the period of time commensurate with the license or subscription term. Payments received before the start of the term for electronic services are recognized as deferred revenues.

(ii) Government and Private Grants and Contracts

Revenue from government and private grants and contracts is recognized as either exchange transactions (if the resource provider receives commensurate benefit) or conditional contributions. Such revenue is recognized over the period of performance as qualifying allowable costs are incurred. Government grants and contracts are subject to audit by federal agencies. Grant and contract revenue is included in other revenues in the accompanying consolidated statements of activities.

(iii) Member Insurance Premiums, Refunds, and Fees

Revenue for member insurance premiums, refunds, and fees is recognized ratably over the insurance policy period, which is generally one year ending December 31. Payments received in advance of the policy period are included in deferred revenues.

(iv) Dues

Revenue for membership dues is recognized ratably over the membership term. The Society renews membership agreements upon termination of the membership period. Payments received in advance of the membership period are included in deferred revenues. There were over 173,000 members at December 31, 2022.

(v) Registration Fees and Booth Sales

Revenue for registration fees and booth sales is recognized when the events occur. Payments received in advance of the events are included in deferred revenues.

(m) Accounts Receivable

Accounts receivables are recorded only when the Society’s right to consideration is unconditional (i.e., the contract is not usually cancellable). Accounts receivables are recorded at the invoiced amount and do not bear interest. The Society maintains an allowance for doubtful accounts for estimated losses. In establishing the allowance, management considers historical losses and past-due balances. ACS records accounts receivable and related contract liabilities (deferred revenue) for non-cancellable contracts with customers when there is a right to consideration.

Revenues and long-term contracts are deferred and recognized ratably over the period of underlying agreement.

(n) Contributions

Contributions, including unconditional promises to give, are recognized when received. Expirations of donor restrictions on net assets (i.e., the donor stipulated purpose has been fulfilled and/or the stipulated time period has elapsed) are reported as net assets released from restrictions in the consolidated statements of activities. Contributions which impose restrictions that are met in the same year they are received are reported as increases in net assets without donor restrictions.

(o) Income Taxes

The Society is generally exempt from federal income taxes under Internal Revenue Code Section 501(c)(3). However, the Society is subject to taxation on any net unrelated business income. As of December 31, 2022, the Society had pre-2018 operating loss carryforward for income tax purposes of $9,450,493 which expires over the years 2022 through 2037 and post-2018 net operating loss of $16,044,013, which can be carried forward indefinitely. A deferred tax asset has not been recorded for the net operating losses because the Society has determined the losses are not recoverable as of December 31, 2022.

Management annually reviews its tax positions and has determined that there are no material uncertain tax positions that require recognition in the consolidated financial statements.

(p) Research Grants

Research grants awarded by the Society meet the definition of conditional contributions made and are recognized ratably over the period of performance, as conditions are met, in accordance with the grant agreements. Research grant expense recognized but not paid is recognized as grants payable. Research grants paid in advance, if any, are recognized as prepaid expenses.

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The Society awarded research grants of $17,355,319 and $16,604,000 in 2022 and 2021, respectively, which are conditional contributions made. Research Grant expense of $17,083,000 and $10,021,000 is reflected in the consolidated statement of activities for the year ended December 31, 2022 and 2021, respectively.

(q) Risks and Uncertainties

(i) Concentration of Credit Risk

The Society is subject to potential concentrations of credit risk in its cash and cash equivalents and investments. Deposits at financial institutions were insured by the Federal Deposit Insurance Corporation (FDIC) up to a maximum of $250,000 at December 31, 2022 and 2021. Investments at other financial institutions were insured by the Securities Investor Protection Corporation (SIPC) up to $500,000, which includes a $250,000 limit for cash. At December 31, 2022 and 2021, the aggregate balances were in excess of the insurance and, therefore, pose some risk since they are not collateralized. The Society has historically not experienced any losses on its cash and cash equivalents and investments in relation to FDIC and SIPC insurance limits.

(ii) Capital Market Risk

The Society invests in domestic equities, foreign equities, and fixed income securities, which are subject to market risk and may result in gains or losses due to changes in market value. In addition, the Society utilizes futures and options to hedge changes in the market value of underlying investments, and forward contracts to hedge changes in the value of revenues denominated in foreign currencies. These financial instruments are also subject to market risk and may result in gains or losses; however, they are not used to leverage market exposure, and any such gains or losses would be largely offset by changes in the market value of the underlying investments or foreign currencies.

(iii) Foreign Currency Risk

Portions of the Society’s revenues and expenditures are in foreign currencies. The Society enters into foreign currency forward contracts to reduce the risk that exchange rate fluctuations will adversely impact the U.S. dollar value of future net revenues denominated in foreign currency.

(iv) Counterparty Risk

The Society enters into derivative instruments and TBA securities with counterparties. While there is risk that the counterparties may fail to meet their obligations, the Society does not have significant positions with any one counterparty.

(v) Insurance Risk

Given the uncertainty of claims experience in any given year and the resulting impact on the level of experience refunds or charges from the insurance carrier, the Insurance Trust can have either a positive or a negative impact on the Society’s consolidated statements of activities.

(r) Recently Adopted Accounting Pronouncements

In August 2018, the FASB issued new accounting guidance, ASU 2018-14, Disclosure *Framework – Changes to the Disclosure Requirements for Defined Benefit Plans*. The new accounting guidance amends ASC 715, *Compensation – Retirement Benefits*, to add, remove, and clarify disclosures related to defined benefit pension and other postretirement plans ACS adopted ASU 2018-14 in 2022 with no material impact on the consolidated financial statements. See Footnote 8 – Postretirement Benefits for a new required disclosure to explain the reasons for significant gains and losses related to changes in the benefit obligation for the period.

In January 2020, the FASB issued update ASU 2020-01, *Clarification to Accounting for Certain Equity Method Investments,* which clarifies the interactions between ASC 321, *Investments – Equity Securities*, ASC 323, *Investments – Equity Method and Joint Ventures*, and ASC *815, Derivatives and Hedging*. The new guidance addresses accounting for the transition into and out of the equity method and measuring certain purchased options and forward contracts to acquire investments. ACS adopted ASU 2020-01 in 2022 with no material impact on the consolidated financial statements.

In September 2020, the FASB issued update ASU 2020-07 *Presentation and Disclosures by Not-for-Profit Entities for Contributed Nonfinancial Assets* to clarify the presentation and disclosure of contributed nonfinancial assets, including land, buildings, and other items. ACS adopted ASU 2020-07 in 2022 with no material impact on the consolidated financial statements.

(3) Accounts Receivables

Accounts receivable consisted of the following as of December 31 (in thousands):

	2022	2021
Accounts receivable	$ 75,721	64,612
Less allowance for doubtful receivables	4,499	4,407
Accounts receivable, net	$ 71,222	60,205

(4) Investments and Fair Value of Financial Instruments

The following tables summarize the Society's investments and other financial instruments measured at fair value on a recurring basis according to the classification hierarchy as of December 31, 2022, and 2021 (in thousands):

December 31, 2022		Investments measured at NAV (1)	Level 1	Level 2	Level 3	Total
Cash equivalents	$	—	17,949	—	—	17,949
Deferred compensation plan assets		—	13,500	—	—	13,500
Foreign currency forward contracts		—	—	2,737	—	2,737
Investments:						
Cash equivalents		—	21,533	2,479	—	24,012
Fixed income and credit:						
U.S. government and agencies		—	54,220	28,316	—	82,536
Foreign		—	73	28,772	—	28,845
Corporate and other		—	96	314,230		314,326
Private credit		14,103	—	—	—	14,103
Equity:						
Domestic		—	164	460,460	—	460,624
Foreign		235,568	100	51,614	—	287,282
Private equity		29,731	—	—	—	29,731
Hedge funds		87,458	—	—	—	87,458
Private real estate		119,686	—	—	—	119,686
Total investments		486,546	76,186	885,871	—	1,448,603
Unsettled transactions primarily for U.S. treasuries and TBA securities		—	2,147	(29,584)	—	(27,437)
Net investment pools		486,546	78,333	856,287	—	1,421,166
Total financial instruments	$	486,546	109,782	859,024	—	1,455,352

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December 31, 2021		Investments measured at NAV (1)	Level 1	Level 2	Level 3	Total
Deferred compensation plan assets	$	—	16,140	—	—	16,140
Foreign currency forward contracts		—	—	5,821	—	5,821
Investments:						
Cash equivalents		—	14,980	4,193	—	19,173
Fixed income and credit:						
U.S. government and agencies		—	116,020	38,636	—	154,656
Foreign		—	122	228,723	—	228,845
Corporate and other		—	37	163,292	—	163,329
Private credit		3,674	—	—	—	3,674
Equity:						
Domestic		—	87	588,601	—	588,688
Foreign		293,975	55	62,212	—	356,242
Private equity		12,064	—	—	—	12,064
Hedge funds		95,679	—	—	—	95,679
Private real estate		69,945	—	—	—	69,945
Total investments		475,337	131,301	1,085,657	—	1,692,295
Unsettled transactions primarily for U.S. treasuries and TBA securities		(608)	(9,784)	(26,244)	—	(36,636)
Net investment pools		474,729	121,517	1,059,413	—	1,655,659
Total financial instruments	$	474,729	137,657	1,065,234	—	1,677,620

(1) Certain investments are measured at fair value using NAV as a practical expedient and have not been classified in the fair value hierarchy. The NAV amounts have been presented to permit reconciliation of the fair value hierarchy to the amounts presented in the statements of financial position.

The following estimates and assumptions were used to determine the fair value of financial instruments within the fair value hierarchy:

- Cash equivalents – Cash equivalents consist of money market funds, and collateral held by custodians. Money market funds are classified as Level 1 given that they are valued at amortized cost, which approximates fair value. Cash equivalents held as collateral by custodians are classified as Level 2 based on prices for similar assets.
- Deferred compensation plan assets – The Society offers a non-qualified tax-advantaged deferred-compensation retirement plan to certain employees per Section 457 of the Internal Revenue Code. Assets of the plan comprise 26 mutual funds that are actively traded on major exchanges and are classified as Level 1.
- Foreign currency forward contracts – Foreign currency forward contracts are derivative instruments and recognized at fair value based on quoted prices, in active markets, for similar contracts and are classified as Level 2.

- Fixed income securities – Fixed income securities primarily include U.S. Treasury issues, U.S. government and agency issues, corporate securities, mortgage-backed securities, asset-backed securities, municipal bonds, fixed income mutual funds, forward purchases and sales, and credit default swaps. U.S. Treasury issues and certain fixed income mutual funds are valued using quoted prices in active markets for identical assets and are classified as Level 1. Fair values of investments in commingled funds, similar to mutual funds, that are deemed to have a readily determinable fair value, but not actively traded, are measured at published NAV and are classified as Level 2. The remainder of this investment class is valued using quoted prices in active markets for similar securities and is classified as Level 2.
- Equity investments – Equity investments consist primarily of common stock held in mutual funds, separate accounts, and commingled trust funds. Securities traded on active exchanges are priced using unadjusted market quotes for identical assets and are classified as Level 1. Securities that are traded infrequently or that have comparable traded assets are priced using available quotes and other market data that are observable and are classified as Level 2. Fair values of investments in commingled funds, similar to mutual funds, that are deemed to have a readily determinable fair value, but not actively traded, are measured at published NAV and are classified as Level 2.

The Society maintains balanced investment portfolios structured to generate current income and long-term appreciation.

(a) Liquidity and Certain Strategies

Investment liquidity of investments measured at NAV is aggregated below based on redemption or sale periods (in thousands):

December 31, 2022		Less than 30 days	Quarterly	> 1 Year	Redemption not permitted during life of fund	Total
Fixed income and credit:						
Private credit	$	—	—	—	14,103	14,103
Equity:						
Foreign		235,568	—	—	—	235,568
Private equity		—	—	—	29,731	29,731
Hedge funds		—	87,458	—	—	87,458
Private real estate		—	98,844	—	20,842	119,686
Total investments	$	235,568	186,302	—	64,676	486,546

December 31, 2021		Less than 30 days	Quarterly	> 1 Year	Redemption not permitted during life of fund	Total
Fixed income and credit:						
Private credit	$	—	—	—	3,674	3,674
Equity:						
Foreign		293,975	—	—	—	293,975
Private equity		—	—	—	12,064	12,064
Hedge funds		—	95,679	—	—	95,679
Private real estate		—	59,774	—	10,171	69,945
Total investments	$	293,975	155,453	—	25,909	475,337

The Society's investments carried at NAV as a practical expedient include equity commingled funds, hedge funds, private real estate funds, private equity funds and private credit funds. The equity commingled funds have redemption notice periods of 1-5 days, the hedge funds have 65-day redemption notice periods, and certain open-ended private real estate funds have redemption notice periods of 45 or 60 days.

The following investments do not permit redemption during the life of the fund:

- Private Credit – The Society has committed $40 million in recent years to private drawdown funds that make collateralized short-term loans. Distributions are received through the liquidation of the underlying assets. As of December 31, 2022, this investment had unfunded commitments of $26,682,000.
- Private Equity – The Society has committed $105 million to private equity funds. This includes $35 million of commitments to venture capital funds. Distributions are received through the liquidation of the underlying assets. As of December 31, 2022, this investment had unfunded commitments of $80,660,000.
- Private Real Estate –The Society's private real estate portfolio, with no redemption rights, consists of three different private funds with varying strategies. Distributions are received through the liquidation of the underlying assets. As of December 31, 2022, this investment had unfunded commitments of $31,820,000.

The significant strategies of the commingled funds, hedge funds, private equity and private real estate funds are as follows:

- Equity commingled funds – are similar to mutual funds except that of an institutional investor class and for which NAV is not priced daily or published and invest in equity securities to achieve long-term growth primarily in a diversified portfolio of global equity securities that possess fundamental investment value.
- Hedge funds – includes an investment in a fund of hedge funds that contains approximately 30 underlying hedge funds. The underlying hedge funds employ a variety of different strategies including long/short equity, fixed income arbitrage, distressed debt, credit and capital structure arbitrage, merger arbitrage, volatility arbitrage, and global asset allocation.

- Private Equity funds – includes investments in private equity funds that deploy different strategies including venture capital, small buy out, as well as portfolios of secondary investments that are well-diversified by investment strategy, vintage year, manager, industry, and geography.
- Private Real Estate – consists primarily of an investment in a core-plus fund that invests in Office, Industrial, Residential and Retail assets. This allocation also includes drawdown fund investments in a net lease focused fund of diversified portfolio of office and industrial properties, an opportunistic real estate fund and a real estate debt fund.
- Private Credit – consists of investments in private credit funds, which seek to generate targeted net annual returns via opportunistic direct lending and securitized lending to private investment funds.

(b) Investment Derivatives

The Society's investment managers may employ derivatives involving contractual or optional commitments for future settlement in order to manage market risks, arbitrage mispricing of securities, or replicate long or short positions in a cost-effective manner. In no instance are derivatives used to speculate or leverage positions. Types of derivatives utilized include foreign currency contracts, credit and interest rate default swaps, and financial futures.

The following tables provide the fair value of investment derivatives as of December 31, 2022 and 2021 and gains and losses for the years ended December 31, 2022 and 2021 (in thousands):

		2022		
		Assets	**Liabilities**	**Gains (losses)**
Derivatives:				
Foreign currency contracts	$	5,998	(6,020)	(22)
Credit default swaps		5	(54)	38
Interest rate swaps		3,495	(850)	673
Financial futures and other		1,782	(2,900)	(1,083)
Total derivatives	$	11,280	(9,824)	(394)

		2021		
		Assets	**Liabilities**	**Gains (losses)**
Derivatives:				
Foreign currency contracts	$	39,186	(39,381)	(195)
Credit default swaps		1,020	(41)	51
Interest rate swaps		891	(480)	361
Financial futures and other		1,037	(1,435)	(64)
Total derivatives	$	42,134	(41,337)	153

As of December 31, 2022, and 2021, the foreign currency contracts had a notional value of $5,981,000 and $39,264,000, respectively.

As of December 31, 2022, and 2021, the total notional amount of credit default swap contracts for sell protection amounted to $800,000 and $21,993,000, respectively. There were $850,000 and $18,250,000 buy protection credit default swaps as of December 31, 2022, and December 31, 2021, respectively.

The notional amounts related to interest rate swap contracts that pay based on fixed rates at December 31, 2022 and 2021 were $43,635,000 and $130,447,000, respectively. The notional amounts related to interest rate swap contracts that pay based on floating rates at December 31, 2022 was $4,946,000. There were no notional amounts related to interest rate swap contracts that pay based on floating rates at December 31, 2021.

Financial futures contracts had a notional value of $0 and $108,888,000 on December 31, 2022, and 2021, respectively.

(c) Other Derivative Instruments

(i) Foreign Currency Forward Contracts

The Society had unrealized loss of $2,457,000 and unrealized gain of $8,706,000 for the years ended December 31, 2022, and 2021, respectively. The unrealized gains or losses are included in non-operating activities in the consolidated statements of activities.

The Society's foreign currency forward contracts are held with one counterparty and are subject to a master netting agreement, which allows for net settlement of positions with the counterparty. The foreign currency forward contracts are presented net in the consolidated statements of financial position within accounts receivable, accounts payable, and deferred revenue. The fair value of the foreign currency forward contracts as of December 31, 2022, and 2021 was as follows (in thousands):

	2022		
	Assets	**Liabilities**	**Net**
Foreign currency forwards	$ 5,415	(2,678)	2,737

	2021		
	Assets	**Liabilities**	**Net**
Foreign currency forwards	$ 5,867	(46)	5,821

The following table summarizes the notional amounts relating to unsettled foreign currency forward contracts maturing at various times through 2025 (in thousands):

		2022	2021
Contracts maturing in 2022	$	—	77,246
Contracts maturing in 2023		70,185	39,423
Contracts maturing in 2024		21,237	3,171
Contracts maturing in 2025		1,555	—
Total notional amount of unsettled forward contracts	$	92,977	119,840

In addition to unrealized gains and losses on foreign currency forward contracts, the Society incurred realized gains and losses throughout the year. To the extent that actual remittances in foreign currencies differ from contracted amounts and the exchange rates at time of settlement are different from contracted exchange rates, the Society realizes gains or losses on settlement. The Society recorded a realized loss of $498,000 and $137,000 in 2022 and 2021, respectively, from foreign exchange transactions.

(5) Liquidity and Availability of Financial Assets

Financial assets available for general expenditure within one year of December 31, 2022, and 2021 are as follows (in thousands):

		2022	2021
Cash and cash equivalents	$	53,533	89,008
Accounts receivable, net		71,222	59,724
Operating investments		570,648	713,335
Total financial assets available within one year	$	695,403	862,067

The Society manages its financial assets to be available as its operating expenditures, liabilities and other obligations come due and to comply with financial guidelines approved by the Society's Board of Directors. Cash in excess of daily requirements is invested short-term in interest-bearing deposit accounts, money market funds, and commercial paper. The Society's operating investments contain short-term and long-term instruments. The Society also has a long-term investment vehicle which is a diversified investment pool with an objective of achieving long-term growth while also producing current income; the underlying investments can be liquidated within one year.

(6) Buildings, Land and Other Property, Net

As of December 31, buildings, land and other property consisted of the following (in thousands):

		2022	2021
Software	$	253,714	232,381
Buildings and improvements		134,774	127,523
Hardware, furniture and equipment		98,540	96,033
Land		2,930	2,930
Total cost of buildings, land and other property		489,958	458,867
Less accumulated depreciation and amortization		364,513	331,024
Buildings, land and other property, net	$	125,445	127,843

(7) Long-Term Debt

As of December 31, 2022, and 2021, long-term debt is comprised of the following (in thousands):

		2022	2021
Series 2021 taxable bonds interest rate 3.78%, due March 1, 2050	$	60,750	60,750
Unamortized debt issuance costs		(60)	(61)
Unamortized debt discount		(336)	(343)
Long-term debt, net	$	60,354	60,346

ACS issued Series 2021 Taxable Bonds in May 2020 to support operational priorities of the Society. Substantially all of the proceeds from the issuance were deposited to the asset pool that funds the Society's closed defined benefit retirement plan. Interest on the bonds is payable semiannually every March 1 and September 1. Bonds will mature on March 1, 2050, and are subject to an optional redemption in part or in whole on or before September 1, 2049. The redemption price of the Bonds equal 100% of the principal amount being redeemed plus sum of present value of the remaining schedule payments of interest to the maturity date plus accrued interest. There are no financial covenants or stand-by credit facilities associated with the bonds.

Interest expense recognized in 2022 and 2021 was $2,306,000 in both periods.

(8) Postretirement Benefits

Defined-Benefit Pension Plan

The Society has a funded noncontributory defined-benefit pension plan (the Plan), which is qualified under Section 401(a) of the Internal Revenue Code and covers employees hired prior to September 1, 2007. The Society makes actuarially determined contributions to satisfy all funding requirements. Effective September 1, 2007, the Plan was closed to new employees. Effective October 31, 2009, the Society froze benefit accruals associated with the Plan, and all participants were transitioned to a defined-contribution retirement plan. As discussed in Note 7, the Society issued debt to fund the defined benefit pension plan in 2020.

Defined-Contribution Retirement Plan (DCRP) and ACS ERISA 403(b) Plans

The Society's 401(a) DCRP and the ACS ERISA 403(b) plans are available to substantially all employees. The DCRP provides an employer contribution equal to 6% of base pay, plus an employer match equal to 50% of the first 6% a participant contributes to the DCRP and/or the ACS ERISA 403(b) plan, a tax-deferred investment program. Employer contributions to the DCRP totaled $17,607,00 and $17,373,000 in 2022 and 2021, respectively.

Postretirement Medical Plan

The Society provides postretirement medical benefits to all benefit-eligible employees who were employed as of October 31, 2001, have at least five years of service, reach retirement age while employed by the Society, and are collecting retirement benefits from the defined-benefit pension plan. The postretirement medical plan is contributory with participants' contributions adjusted annually. The prescription benefit is actuarially equivalent to Medicare Part D and eligible for the federal subsidy. The Society's contributions toward the overall cost of postretirement medical insurance for both current and future eligible retirees were capped at the 2009 level.

Effective January 1, 2016, the Society adopted a Medicare Advantage Plan for eligible retirees and spouses who are at least 65 years old. The Medicare Advantage Plan continues to provide eligible retirees with an option for medical coverage.

The following tables present the change in benefits obligations, change in plan assets, and the composition of accrued benefits costs and amounts recognized in the accompanying consolidated statements of financial position and consolidated statements of activities for the years ended December 31, 2022 and 2021 (in thousands).

(a) Defined-Benefit Pension and Postretirement Medical Plans

		Defined-benefit pension plan		Postretirement medical plan	
		2022	**2021**	**2022**	**2021**
Change in benefits obligation:					
Benefits obligation at January 1	$	739,629	767,973	44,869	48,733
Service cost		—	—	525	541
Interest cost		19,896	18,091	1,234	1,113
Plan participants' contributions		—	—	1,055	2,245
Actuarial (gain) loss		(162,229)	(5,351)	(12,735)	(3,232)
Benefits and administrative fees paid		(42,731)	(41,084)	(2,518)	(4,531)
Benefits obligation at December 31		554,565	739,629	32,430	44,869
Change in fair value of plan assets:					
Plan assets at January 1		744,510	792,377	—	—
Actual return (loss) on plan assets		(151,094)	(6,783)	—	—
Employer contributions		—	—	1,463	2,286
Plan participants' contributions		—	—	1,055	2,245
Benefits and administrative fees paid		(42,731)	(41,084)	(2,518)	(4,531)
Plan assets at December 31		550,685	744,510	—	—
Funded status	$	(3,880)	4,881	(32,430)	(44,869)

		Defined-benefit pension plan		Postretirement medical plan	
		2022	**2021**	**2022**	**2021**
Amounts recognized in the consolidated statements of financial position	$	(3,880)	4,881	(32,430)	(44,869)
Net asset (liability) at December 31	$	(3,880)	4,881	(32,430)	(44,869)

The defined-benefit pension plan unfunded liability decreased by $8.8M from $(4.9M) to $3.9M over the last fiscal year which was primarily driven by fluctuations in capital markets. Capital markets experienced significant changes between December 31, 2021, and December 31, 2022, resulting in historically large increases in discount rates used to measure plan liabilities, generating large liability gains. Additionally, assumption changes were made to the COLA and interest crediting rate assumptions which resulted in modest offsetting loss toward the significant discount rate gains.

The significant liability net gains were mostly offset by large asset losses, consistent with recent capital market experience. Consequently, the plan's balance sheet, i.e., Funded Status, Accumulated Other

Comprehensive Income, and Unrecognized Net Asset items remained relatively stable, consistent with the investment strategy which explicitly links the assets and liabilities to move in tandem and hedge against volatility of the plan's funded status.

The unfunded liability related to the postretirement medical plan decreased by $12.5M from $44.9M to $32.4M over the last fiscal year is primarily driven by the significant increase in discount rates Capital markets experienced significant changes between December 31, 2021, and December 31, 2022, resulting in historically large increases in discount rates used to measure plan liabilities, generating large liability gains.

Given there are no offsetting assets (i.e., unlike the ACS pension plan), the plan experienced large changes to its balance sheet items due to the large liability gains experienced during fiscal 2022. The primary driver of the liability gains was the increase in the plan's discount rate from 2.82% to 5.43%. Additionally, the plan continues to see decreases in the covered population (most recent census captured as of July 1, 2022), consistent with recent years' experience, generating additional liability gains reflected in the December 31, 2022, year-end reporting.

(b) Components of Net Periodic Benefit Cost (Credits) for the Year Ended December 31 (in thousands)

		Defined-benefit pension plan		Postretirement medical plan	
		2022	**2021**	**2022**	**2021**
Service cost	$	—	—	525	541
Interest cost		19,896	18,091	1,234	1,113
Expected return on plan assets		(26,216)	(23,160)	—	—
Amortization of prior service credits		—	—	(1,102)	(1,103)
Amortization of net actuarial loss		7,337	6,094	1,902	2,547
Net periodic benefit cost (credits)	$	1,017	1,025	2,559	3,098

(c) Other Changes in Plan Assets and Benefits Obligations Recognized in Non-Operating Activities

The following table provides information for other changes in plan assets and benefits obligations recognized in net assets without donor restrictions for the years ended December 31 (in thousands):

	Defined-benefit pension plan		Postretirement medical plan	
	2022	2021	2022	2021
Net actuarial (gain) loss	$ 15,081	24,592	(12,735)	(3,232)
Amortization of prior service credit	—	—	1,102	1,103
Amortization of net actuarial loss	(7,337)	(6,094)	(1,902)	(2,547)
Total recognized in net assets without donor restriction	$ 7,744	18,498	(13,535)	(4,676)

(d) Assumptions

Assumptions used to determine benefits obligations on December 31 are as follows:

	Defined-benefit pension plan		Postretirement medical plan	
	2022	2021	2022	2021
Discount rate	5.42 %	2.77 %	5.43 %	2.82 %
Mortality projection scales	MP-2021	MP-2021	MP-2021	MP-2021

Assumptions used to determine net periodic benefit cost for the years ended December 31 are as follows:

	Defined-benefit pension plan		Postretirement medical plan	
	2022	2021	2022	2021
Discount rate	2.77 %	2.42 %	2.82 %	2.36 %
Expected return on plan assets	5.50 %	3.63 %	N/A	N/A

The Society determines the long-term expected rate of return on plan assets by examining historic capital market returns, correlations between asset classes, and the Plan’s normal asset allocation. Current and near-term market factors such as inflation and interest rates are then evaluated to arrive at the expected return on plan assets. Peer group and benchmarking data are also reviewed to ensure a reasonable return assumption.

(e) Plan Assets

The Society's defined-benefit pension plan asset allocation as of December 31, by asset category, is as follows:

	Plan assets	
	2022	**2021**
Domestic equities	4 %	3 %
Foreign equities	2	2
Fixed income securities	94	95
Total	100 %	100 %

The investment portfolio is comprised of a diversified combination of domestic equities, foreign equities, and fixed income securities. The investment policy incorporates a liability-driven investment approach that focuses on the funded status of the Plan and seeks to match the duration of the assets with that of the liabilities. As the Plan's funded status improves, asset allocation will be directed more toward long duration fixed income securities. The allocation among domestic equities, foreign equities, and fixed income securities is determined by the funded status of the Plan, prevailing market conditions, and relative valuations between asset classes. The Plan's financial condition is monitored on an ongoing basis by means of monthly funding reviews, quarterly investment portfolio reviews, an annual independent actuarial valuation, and periodic asset/liability studies.

The Society utilizes the best information available in measuring fair value of the Plan's assets and liabilities, and they are classified based on the lowest level of input that is significant to the fair value measurement. The fair value measurement principles for the Plan's assets are consistent with those disclosed in Note 2.

The following tables summarize valuations of the Society's defined-benefit pension plan assets according to the fair value hierarchy as of December 31, 2022, and 2021 (in thousands):

December 31, 2022	**Investments Measured at NAV** (1)	**Level 1**	**Level 2**	**Level 3**	**Total**
Cash equivalents	$ 19,419	3,034	10,433	—	32,886
Fixed income:					
U.S. government and agencies	—	102,578	3,628	—	106,206
Foreign	—	—	97,530	—	97,530
Corporate and other	73,907	—	218,571	—	292,478
Equity:					
Domestic	—	—	19,534	—	19,534
Foreign	10,104	—	—	—	10,104
Unsettled transactions, net (2)	(100)	—	(11,421)	—	(11,521)
Net plan assets (3)	$ 103,330	105,612	338,275	—	547,217

December 31, 2021		Investments Measured at NAV [1]	Level 1	Level 2	Level 3	Total
Cash equivalents	$	22,349	7,660	6,799	—	36,808
Fixed income:						
U.S. government and agencies		—	166,587	5,240	—	171,827
Foreign		—	—	120,484	—	120,484
Corporate and other		120,705	—	254,808	—	375,513
Equity:						
Domestic		—	—	24,169	—	24,169
Foreign		13,224	—	—	—	13,224
Unsettled transactions, net [2]		(100)	—	2,585	—	2,485
Net plan assets	$	156,178	174,247	414,085	—	744,510

(1) Certain investments are measured at fair value using NAV as a practical expedient and have not been classified in the fair value hierarchy. The NAV amounts have been presented to permit reconciliation of the fair value hierarchy to the amounts reported as total plan assets.

(2) Includes pending settlements for TBA securities and purchased securities.

(3) As of December 31, 2022, the difference between the plan assets disclosed in footnote 8 (a) and here in 8 (e) is due to a transfer in progress from the plan's trustee to the plan's administrator in the amount of $3.5 million.

(f) Liquidity and Certain Strategies

Plan assets, inclusive of investments stated at NAV as a practical expedient, have redemption liquidity of less than 30 days with no significant notice periods. The Plan has no investment funding commitments.

(g) Derivatives

The Plan's fixed income investment manager may employ derivatives in order to manage market risks, arbitrage mispricing of securities, or replicate long or short positions in a cost-effective manner. In no instance are derivatives used to speculate or leverage positions.

The following tables provide the fair value of plan asset derivative agreements as of December 31, 2022, and 2021, and gains and losses for the years ended December 31, 2022, and 2021 (in thousands):

	2022		
	Assets	**Liabilities**	**Gains (losses)**
Derivatives:			
Foreign currency contracts	$ 6,155	(6,227)	(72)
Credit default swaps	1,139	(85)	553
Interest rate swaps	4,598	(1,790)	2,137
Financial futures and other	9,004	(15,831)	(6,800)
Total derivatives	$ 20,896	(23,933)	(4,182)

	2021		
	Assets	**Liabilities**	**Gains (losses)**
Derivatives:			
Foreign currency contracts	$ 30,831	(30,877)	(46)
Credit default swaps	477	(50)	196
Interest rate swaps	761	(2,232)	(1,239)
Financial futures and other	2,146	(5,045)	(2,098)
Total derivatives	$ 34,215	(38,204)	(3,187)

As of December 31, 2022, and 2021, the foreign currency contracts had a notional value of $6,152,000 and $30,779,000, respectively.

The total notional amount of credit default swap contracts for buy protection as of December 31, 2022, and 2021 amounted to $16,600,000and $15,900,000, respectively. The notional amount related to sell protection amounted to $11,500,000 and $3,100,000 as of December 31, 2022, and 2021, respectively.

The notional amount of interest rate swap contracts that pay based on fixed rates at December 31, 2022 and 2021 was $31,500,000 and $206,590,000, respectively. The notional amount of interest rate swap contracts that pay based on floating rates at December 31, 2022 was $29,199,000. There were no notional amounts related to interest rate swaps that pay based on floating rates for 2021. Financial futures had a notional value of $0 and $917,909,000 at December 31, 2022 and December 31, 2021, respectively.

The Plan does not have significant positions with any one counterparty.

(h) Projected Benefit Payments

The following are expected benefits payments in future years (in thousands):

		Defined-benefit pension plan payments	Postretirement medical plan payments
Fiscal year 2023	$	43,256	2,354
Fiscal year 2024		44,049	2,507
Fiscal year 2025		44,499	2,602
Fiscal year 2026		44,581	2,690
Fiscal year 2027		44,793	2,760
Fiscal years 2028–2032		217,718	14,216

(9) Petroleum Research Fund

The American Chemical Society Petroleum Research Fund is a donor-restricted endowment fund established on October 25, 2000, as a result of The Agreement of Transfer of Trust (the Agreement) between the Society and Morgan Guaranty Trust Company of New York, approved by the Attorney General for the State of New York, and ordered by the Supreme Court of New York. The Agreement dissolved the Petroleum Research Fund Trust (the Trust) and transferred the assets to the Society to create the American Chemical Society Petroleum Research Fund (the PR Fund), the purpose of which is the same as the Trust. The Agreement made the Society responsible for the management and administration of the PR Fund in an account separate and apart from any other accounts of the Society. As a result of the transfer, the historic dollar value for the Fund was established at $72,500,000, the value of the securities originally donated in 1944 to create the Trust. This amount must be held inviolate as donor-restricted net assets.

The assets of the PR Fund consist primarily of domestic equities, foreign equities, fixed income securities and hedge funds. Under the terms of the Agreement, annual payouts from the PR Fund are capped at a maximum spending rate of 4% of the net asset value of the PR Fund over a rolling three-year average. The Society uses distributions from the PR Fund to make grants for advanced scientific education and fundamental research in the petroleum field.

The PR Fund awarded grants of $17,355,000 in 2022 and $16,604,000 in 2021. The Society’s conditional commitment for awards aggregated $26,080,000 and $24,234,000 as of December 31, 2022, and 2021, which will be recognized over the award period.

(10) Net Assets

The following is a summary of net assets at December 31 (in thousands):

		2022	2021
Without donor restrictions:			
Insurance trust	$	26,748	35,919
Board designated – ACS programs		80,816	5,617
Other net assets		521,296	674,975
Total without donor restrictions		628,860	716,511
With donor restrictions:			
PR fund		601,422	742,448
ACS programs		132,544	159,394
Total with donor restrictions		733,966	901,842
Total net assets	$	1,362,826	1,618,353

Net assets released from restriction were $26,258,000 and $19,356,000 for the years ended December 31, 2022 and 2021, respectively and primarily represents grant and scholarship programs.

(11) Endowment and General Fund

The Society has invested its Endowment (Endowment) and its general operating fund (General Fund) in a single unitized investment pool. The spending policy, return objective and risk parameters, and strategies employed for achieving objectives are applied across the investment pool.

The Endowment provides stable financial support to a wide variety of programs and activities in perpetuity, playing a critical role in enabling the Society to achieve its mission. Programs supported by the Endowment include scholarships, grants and awards as well as assistance to educational and membership programs. The Endowment includes both donor-restricted endowment funds and funds designated by the Society's Board of Directors to function as endowments (Board Designated Endowment Funds). Net assets associated with endowment funds, including funds designated by the Board to function as endowments, are classified and reported based on the existence or absence of donor-imposed restrictions. While the Society has invested its General Fund within the unitized investment pool, the General Fund is not a Board Designated Endowment. The Society's endowment excludes contributions receivable and split interest agreements.

(a) Interpretation of Relevant Law

The Society's Board of Directors evaluated the Uniform Prudent Management of Institutional Funds Act (UPMIFA) and interprets UPMIFA as requiring the Society to manage and invest donor-restricted endowment funds in good faith and with prudence. As a result, the Society classifies as net assets with donor restrictions the sum of (a) the original value of gifts donated to the donor-restricted endowments, (b) the original value of subsequent gifts to donor-restricted endowments, (c) additions to the donor-restricted endowments made in accordance with explicit donor instructions stipulated in the gift instruments and d) the appreciation on donor-restricted endowment funds until those amounts are available for expenditure in a manner consistent with the donor gift instrument, the program operating budgets and the standard of prudence prescribed by UPMIFA.

In accordance with UPMIFA, the Society considers the following factors in making a determination as to the preservation and use of the donor-restricted endowment funds: the donor gift instrument; the duration and preservation of the fund; the purposes of the Society and the fund; general economic conditions; the effect of inflation and deflation; expected total return from income and the appreciation of investments; other resources of the Society; and the Society's investment policies.

(b) Spending Policy

On January 1, 2020, the Society's Board Committee on Pensions and Investments established a total return spending policy, inclusive of the General Fund. The spending policy is designed to stabilize annual amounts available to support endowed programs and preserve portfolio values by ensuring a portion of investment return is distributed to operations in the form of payout for current expenditure with the remainder reinvested to shield against inflation. The annual payout is intended to approximate 4% of the trailing three-year average market value of the unitized investment pool.

Prior to January 1, 2020, funds were appropriated from the endowment funds when expenses were approved by management. Expenditures of endowment assets are recorded in accordance with the explicit donor instructions stipulated in the gift instruments.

Accumulated appreciation in endowment funds with donor-restricted corpus is classified as net assets with donor restrictions until appropriated for spending under the spending policy. At the time of appropriation, the amount of investment income necessary to satisfy the spending policy for the endowment fund and related purpose restrictions, if applicable, is reflected as a net assets released from restriction for donor restricted endowment funds (if the restriction was satisfied), which reduces net assets with donor restrictions and increases net assets without donor restrictions. Any excess of income earned over the approved spending amount is retained in net assets with donor restrictions within the endowment. Any appropriated amounts which have not yet been spent for their donor restricted purpose are retained in net assets with donor restrictions but are removed from the endowment.

(c) Return Objective and Risk Parameters

The Investment Pool is invested in accordance with the Society's investment policies. The investment policies are intended to assure the Society's Board of Directors and the Board Committee on Pensions and Investments that the assets of the Society are being invested in accordance with the best long-term interests of the Society and its donors, given the following considerations: the Society's risk tolerance; the need to obtain real, or inflation-adjusted growth in its investments; and the requirement for current income to support programs and activities. Under the policies, as approved by the Board Committee on Pensions and Investments, Investment Pool assets are invested in a manner intended to provide sufficient inflation-adjusted returns to support annual spending policies and achieve real growth in the asset base while maintaining a moderate level of investment risk.

(d) Strategies Employed for Achieving Objectives

To satisfy its long-term rate-of-return objectives, the Society relies on a total return strategy in which investment returns are achieved through both capital appreciation (realized and unrealized) and current yield (interest and dividends). The Society targets a diversified asset allocation that places a greater emphasis on equity-based investments to achieve its long-term return objectives within prudent risk constraints.

(e) Underwater Endowment Funds

From time to time, the fair value of assets associated with donor-restricted endowment funds may fall below the original value. The Society has interpreted UPMIFA to permit spending from underwater funds in accordance with the prudent measures required under law. In accordance with accounting guidance for not-for-profit organizations, deficiencies of this nature are reported in net assets with donor restrictions. As of December 31, 2022, funds with an original gift value of $28,286,000 were underwater by $1,223,000. As of December 31, 2021, no endowments were underwater.

Endowment net assets consist of the following as of December 31 (in thousands):

	2022		
	Without donor restrictions	**With donor restrictions**	**Total**
Board designated endowment funds	$ 80,816	—	80,816
Donor-restricted endowment funds:			
Endowment corpus	—	149,064	149,064
Accumulated investment return	—	548,590	548,590
Total endowment net assets	$ 80,816	697,654	778,470

	2021		
	Without donor restrictions	**With donor restrictions**	**Total**
Board designated endowment funds	$ 5,617	—	5,617
Donor-restricted endowment funds:			
Endowment corpus	—	148,676	148,676
Accumulated investment return	—	715,097	715,097
Total endowment net assets	$ 5,617	863,773	869,390

(Continued)

The following tables show the beginning balances of the Society's endowment funds as of January 1, changes in endowment net assets for the year, and ending balances as of December 31, 2022, and 2021, respectively (in thousands):

		2022		
		Without donor restrictions	**With donor restrictions**	**Total**
Beginning endowment net assets	$	5,617	863,773	869,390
Investment return, net		(9,691)	(147,002)	(156,693)
Contributions		85,000	1,476	86,476
Appropriation of endowment assets for expenditure		(110)	(28,327)	(28,437)
Other changes		—	7,734	7,734
Ending endowment net assets	$	80,816	697,654	778,470

		2021		
		Without donor restrictions	**With donor restrictions**	**Total**
Beginning endowment net assets	$	2,886	814,504	817,390
Investment return, net		324	76,363	76,687
Contributions		2,000	728	2,728
Appropriation of endowment assets for expenditure		(75)	(26,203)	(26,278)
Other changes		482	(1,619)	(1,137)
Ending endowment net assets	$	5,617	863,773	869,390

In 2022 and 2021, the Board-approved appropriation from the General Fund was $19,211,000 and $16,213,000, respectively for operating support. As of December 31, 2022, and 2021, the balance of the General Fund was $598,459,000 and $724,944,000, respectively.

(Continued)

(12) Expenses

The composition of expenses for the years ended December 31 is as follows (in thousands):

	2022						
	Compensation and benefits	Professional services	Materials and supplies	Depreciation expense	Grants and assistance	Other operating expenses	Total
Program:							
Information services	$ 249,458	156,148	55,976	29,886	619	32,816	524,903
Society programs:							
Membership and society services	10,357	2,749	2,056	1,828	1,834	13,044	31,868
Education	6,585	2,719	1,172	500	3,962	2,462	17,400
Member insurance program	561	12,839	39	31	1	429	13,900
External affairs and communications	15,204	2,802	3,945	1,574	223	1,394	25,142
Scientific advancement	4,329	907	574	483	15,693	1,818	23,804
Supporting:							
Finance, administration and human resources	20,859	6,293	2,494	1,307	27	4,879	35,859
Information technology	1,971	648	1,291	1,040	—	127	5,077
Marketing and promotion	2,970	3,809	623	194	1	545	8,142
Total operating expenses 2022	$ 312,294	188,914	68,170	36,843	22,360	57,514	686,095

	2021						
	Compensation and benefits	Professional services	Materials and supplies	Depreciation expense	Grants and assistance	Other operating expenses	Total
Program:							
Information services	$ 203,287	103,324	37,635	24,643	517	21,104	390,510
Society programs:							
Membership and society services	11,655	3,914	1,596	738	1,385	5,843	25,131
Education	6,334	1,750	960	123	4,159	514	13,840
Member insurance program	227	12,733	3	—	—	447	13,410
External affairs and communications	13,363	1,756	2,784	636	274	1,081	19,894
Scientific advancement	3,563	632	262	222	8,934	145	13,758
Supporting:							
Finance, administration and human resources	39,914	9,927	3,182	2,344	56	3,114	58,537
Information technology	21,375	1,859	11,470	6,087	—	852	41,643
Marketing and promotion	7,016	19,320	1,154	3	—	928	28,421
Total operating expenses 2021	$ 306,734	155,215	59,046	34,796	15,325	34,028	605,144

Natural expense classes are comprised of Compensation and Benefits; Professional Services, which includes sales promotion and advertising services; Materials and Supplies, which includes building and office operations; Depreciation Expense; and Grants and Assistance, which includes research, travel, and other grants, as well as fellowships and scholarships. Other Operating Expenses includes services related to conducting Society sponsored meetings and events and other expenses that support the operations of the Society.

Program services are comprised of Information Services and Society Programs. Information Services includes services performed by CAS (databases of chemical and related scientific information) and Publications Divisions (print and electronic scientific journals). Society Programs includes member-focused activities such as continuing education programs, national and regional meetings, employment services and public outreach, scientific advancement, as well as the member insurance program.

Supporting services include expenses associated with the institutional support of the Society, including administrative functions such as finance, human resources, the investment program, enterprise-wide technical infrastructure, promotion and marketing, and fundraising activities. The Society incurred direct fundraising expenses of $1,497,000 in 2022 and $1,459,000 in 2021. Expenses which are related to both program and supporting, including facilities and information technology costs, are allocated based on department headcount, a percentage of total operating expenses and salary.

Changes were made to the classification between programmatic and supporting expenses to better align with and reflect the Society's operations in 2022.

(13) Commitments and Contingencies

Lawsuits and Legal Claims

The Society is involved in various claims and legal actions arising in the ordinary course of business. Based upon information currently available, management believes the ultimate disposition of these matters will not have a material adverse effect on the Society's consolidated financial position, change in net assets, or cash flows.

Uncertain Tax Provisions

The Society is subject to taxation in several jurisdictions and is currently under audit for the 2014-2020 tax years in a foreign territory, as a matter of conducting ordinary business activities in the country. The foreign tax authority has challenged the Society's position on its tax filing. The Society has appealed the tax rulings. Due to the uncertainty associated with the tax appeals, the Society has not recorded a provision in the consolidated financial statements. It is possible that at some future date, liabilities resulting from the audits could be incurred. Management intends to pursue all administrative and judicial remedies necessary to resolve the matter. Based on current legislation, and after consultation with outside tax advisors, management believes the ultimate resolution of the audits will not have a material adverse impact on the Society's financial condition taken as a whole.

(14) Subsequent Events

The Society has performed an evaluation of subsequent events through March 3, 2023, which is the date the consolidated financial statements were available to be issued, noting no adjustments or disclosures were required to the consolidated financial statements.