Howard Hughes Medical Institute

Consolidated Financial Statements
for the years ended August 31, 2019 and 2018
and Report of Independent Auditors Thereon

Report of Independent Auditors

To the Trustees of the Howard Hughes Medical Institute

We have audited the accompanying consolidated financial statements of Howard Hughes Medical Institute and its subsidiaries (the "Institute"), which comprise the consolidated statements of financial position as of August 31, 2019 and 2018, and the related consolidated statements of activities and of cash flows for the years then ended.

Management's Responsibility for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with accounting principles generally accepted in the United States of America; this includes 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.

Auditors' Responsibility

Our responsibility is to express an opinion on the consolidated financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on our judgment, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In making those risk assessments, we consider internal control relevant to the Institute's preparation and fair presentation of the consolidated financial statements 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 Institute's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of Howard Hughes Medical Institute and its subsidiaries as of August 31, 2019 and 2018 and the changes in their net assets and their cash flows for the years then ended in accordance with accounting principles generally accepted in the United States of America.

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Emphasis of Matter

As discussed in Note 2 to the consolidated financial statements, the Institute changed the manner in which it reports certain aspects of its consolidated financial statements as a not-for-profit entity in 2019. Our opinion is not modified with respect to this matter.

PricewaterhouseCoopers LLP

McLean, Virginia
November 22, 2019

HOWARD HUGHES MEDICAL INSTITUTE

Consolidated Statements of Financial Position
August 31, 2019 and 2018

(In thousands)

Assets	2019	2018
Cash and cash equivalents	$ 749,409	$ 685,827
Escrowed bond proceeds	41,805	-
Due from brokers	86,356	49,292
Securities lending collateral	40,818	170,354
Investment receivables	86,066	55,320
Investments and derivative assets	20,707,541	22,100,203
Deferred income taxes, net	12,895	-
Land, buildings, laboratory space, and equipment, net	749,921	684,465
Other assets	69,601	70,798
Total assets	$ 22,544,412	$ 23,816,259
Liabilities		
Accounts payable and accrued liabilities	$ 150,855	$ 151,760
Investment payables	59,344	50,644
Investment and derivative liabilities	728,559	576,239
Obligation to return securities lending collateral	40,818	170,354
Grant commitments	103,647	157,321
Post-retirement/employment obligations	501,051	370,315
Capital financing		
Note payable	40,376	40,376
Capital lease obligation	13,221	17,904
Bonds payable	767,255	1,911,987
Total liabilities	2,405,126	3,446,900
Net assets	20,139,286	20,369,359
Total liabilities and net assets	$ 22,544,412	$ 23,816,259

The accompanying notes are an integral part of these consolidated financial statements.

HOWARD HUGHES MEDICAL INSTITUTE

Consolidated Statements of Activities
For the Years Ended August 31, 2019 and 2018

(In thousands)

Revenue	2019	2018
Net investment earnings	$ 640,700	$ 1,849,590
Intellectual property and other income	105,303	22,179
Total revenue	746,003	1,871,769
Expenses		
Program activities		
Medical research	763,053	587,784
Science education and other scientific programs	50,679	87,752
General and administrative	121,396	120,506
Deferred tax benefit, net	(12,895)	-
Loss on extinguishment of debt	38,277	-
Total expenses	960,510	796,042
(Decrease)/increase in net assets from operating activities	(214,507)	1,075,727
Other changes		
Postretirement changes other than net periodic costs	(15,566)	(15,566)
Total (decrease)/increase in net assets	(230,073)	1,060,161
Net assets, beginning of year	20,369,359	19,309,198
Net assets, end of year	$ 20,139,286	$ 20,369,359

The accompanying notes are an integral part of these consolidated financial statements.

HOWARD HUGHES MEDICAL INSTITUTE

Consolidated Statements of Cash Flows
For the Years Ended August 31, 2019 and 2018

(In thousands)	2019	2018
Change in net assets	$ (230,073)	$ 1,060,161
Adjustments to reconcile change in net assets to net cash used for operating activities		
Depreciation and amortization	78,144	77,482
Postretirement changes other than net periodic costs	15,566	15,566
Loss on disposal of assets	5,585	11,999
Loss on extinguishment of debt	38,277	-
Income earned from stock dividends	(3,065)	(2,606)
Deferred tax benefit	(12,895)	-
Realized gains on investments and derivative contracts, net	(1,161,520)	(1,290,547)
Change in unrealized (gains)/losses of investments and derivative contracts	580,725	(452,323)
Change in receivables	(38,602)	156,935
Change in due from brokers	(37,064)	(13,198)
Change in operating payables and accrued liabilities	22,004	4,113
Change in grant commitments	(53,674)	(16,029)
Change in post-retirement/employment obligations	115,170	(57,823)
Net cash used for operating activities	(681,422)	(506,270)
Cash flows from investing activities		
Purchases of investments funded by escrowed bond proceeds	(51,119)	-
Proceeds from sale of investments of escrowed bond proceeds used to fund apartment building construction costs	9,438	-
Building and equipment purchases	(153,673)	(57,431)
Proceeds from sales, maturities of investments, securities sold short and derivative contracts	13,739,779	12,267,279
Purchases of investments, derivative contracts and purchases to cover securities sold short	(11,611,105)	(11,509,592)
Addition/(redemption) of securities lending collateral investments	129,536	(170,354)
Net cash provided by investing activities	2,062,856	529,902
Cash flows from financing activities		
Proceeds from issuance of long-term debt	51,773	-
Proceeds from failed sale-leaseback transactions	3,442	11,660
Payments to redeem long-term debt	(1,200,000)	-
Payments of debt issuance costs	(773)	-
Payments of debt extinguishment costs	(34,633)	-
Principal payments under capital lease obligations	(8,125)	(6,581)
(Repayments)/proceeds from securities lending program	(129,536)	170,354
Net cash (used for) / provided by financing activities	(1,317,852)	175,433
Net increase in cash	63,582	199,065
Cash and cash equivalents, beginning of year	685,827	486,762
Cash and cash equivalents, end of year	$ 749,409	$ 685,827
Supplemental disclosure of non-cash investing activities		
Accruals for equipment and construction costs included in *Accounts payable and accrued liabilities*	$ 4,108	$ 3,814

The accompanying notes are an integral part of these consolidated financial statements.

1. ORGANIZATION

Howard Hughes Medical Institute ("HHMI" or the "Institute") was established for the purpose of promoting knowledge within the basic sciences, principally medical research and education, and the effective application of this knowledge for the benefit of humanity. The Institute conducts basic biomedical research at its Janelia Research Campus ("Campus") located in Loudoun County, Virginia, and at universities, hospitals, and other not-for-profit research institutions ("host institutions") throughout the U.S. under the terms of collaboration agreements.

In addition to its basic research activities, the Institute funds grants to both institutions and individuals in support of a wide range of science and research-related initiatives, including precollege and undergraduate science education, pre- and post-doctoral research fellowships, and international research activities. Most of the Institute's grant awards to individuals are fellowships administered by the awardee's institution for the benefit of the awardee.

For many years, the Institute has created science education resources for use by classroom teachers and has distributed these broadly without charge. The Institute also supports a science film initiative which develops, produces, and disseminates science programming through broadcast television and other media channels. Film footage produced through this initiative may also be used to expand and enhance the science education resources designed for classroom use.

The Institute's investments are its principal source of financial support. The Institute's long-range investment goal is to manage the fund in a prudent manner that will support the Institute's programs in perpetuity. A majority of the Institute's spending is on programs that involve long-term commitments: the Institute's medical research program at host institutions and Janelia Research Campus, in which it makes multi-year employment, budget, and other spending commitments to its investigators and group leaders, and a grants program in which the Institute makes multi-year grant commitments for science education and to support research by early-career scientists. These attributes of the Institute's mode of operation present the need to balance longer-term investment fund growth, stabilize investment returns, and maintain liquidity.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

The consolidated financial statements include the accounts of the Institute's wholly-owned subsidiaries which are used primarily in connection with investment activities. All intra-company transactions and accounts have been eliminated.

Basis of Presentation

The consolidated financial statements are prepared in accordance with accounting principles generally accepted in the United States of America ("GAAP"). These principles require management to make estimates and assumptions that affect the reported amounts of assets and liabilities at the date of the consolidated financial statements and the reported revenues and expenses during the reporting period. Actual results could differ from those estimates.

Cash and Cash Equivalents

Cash and cash equivalents are recorded at amortized cost which approximates fair value and include both U.S. and non-U.S. currency and short-term interest-bearing marketable instruments with original maturities of 90 days or less from the initial purchase date. The purchases and sales of cash equivalents

are not presented on the Consolidated Statements of Cash Flows. These balances are held at the Institute's custodians, prime brokers, clearing agents, and banking institutions for investment and working capital purposes.

The total cash and cash equivalents maintained at various institutions exceeds the amount guaranteed by federal agencies and, therefore, bears some risk. The Institute has not experienced any loss due to this risk. Interest earned on cash and cash equivalents is recognized in *Net investment earnings* within the Consolidated Statements of Activities.

Foreign Currency Translation

Securities and cash denominated in foreign currencies are translated into U.S. dollar equivalents using year-end spot foreign currency exchange rates. Investment payables and receivables are valued using either spot or interpolated forward rates as applicable based on the expected settlement date. Purchases and sales of financial instruments, and their related income and expenses, are translated at the rate of exchange on the respective date of such transactions. The Institute includes realized gains/(losses) and unrealized appreciation/(depreciation) on investments and derivative financial instruments resulting from foreign currency changes in *Net investment earnings* on the Consolidated Statements of Activities. The Institute does not isolate that portion of the results of operations resulting from changes in foreign exchanges rates on securities and derivative contracts from the fluctuations arising from changes in market price of securities and derivative contracts held. Such fluctuations are included in *Net investment earnings*. The Institute may be exposed to risks that the exchange rate of the U.S. dollar relative to other currencies may change in a manner that has an adverse effect on the reported value of that portion of the Institute's assets or liabilities that is denominated in currencies other than the U.S. dollar.

Escrowed Bond Proceeds

The Institute issued approximately $51.8 million of capital appreciation bonds in June 2019 to finance the construction costs of an apartment building at the Janelia Research Campus in Loudoun County, Virginia. Funds received from the initial issuance and any income from investments of these funds are maintained in a separate segregated trust account established by the Trustee. These funds are used to finance, refinance or reimburse the Institute for costs of the construction project, including any costs of issuing the bonds. The Institute invests the funds on deposit in securities issued and explicitly guaranteed as to principal and interest by the U.S. or any agency or instrumentality thereof, and repurchase agreements in respect of U.S. Government Securities.

Restricted Funds

The Institute generally does not accept donations or other contributions, but has made several exceptions, including accepting a very limited number of grants from other not-for-profit organizations to support specific research activities at the Janelia Research Campus, and accepting funding from a few other not-for-profit organizations that are collaborating with the Institute on grant programs. These grants entail restrictions on how the funds may be used. As a result, there are restrictions on net assets, which the Institute considers immaterial to its financial statements.

Intellectual Property

The Institute receives licensing fees and royalty income in connection with the commercialization of intellectual property created by its scientists. Licensing fees and royalty income are recorded as revenue in the Consolidated Statements of Activities as performance obligations are satisfied under the terms of the contracts.

In addition, the Institute may indirectly have equity interests in startup companies formed to commercialize inventions created by its investigators. Such equity interests are held in the host institution's name for the benefit of HHMI until such time as the host institution disposes of that interest. As a result, recognition of value related to such equity interests is recorded only upon notification to HHMI by the host institution that its equity interest has been sold, and the Institute's share of the proceeds has been determined. No value for such equity interests is carried on the Consolidated Statements of Financial Position.

The Institute may in the future directly hold equity or other interests in some startup companies formed to commercialize inventions created by its group leaders or other researchers at the Janelia Research Campus. In this event, the equity or other interests would be managed by the Institute's Investment Department and appropriately recorded in the consolidated financial statements.

Investments

Investments are presented at fair value in accordance with U.S. GAAP. When available, investments are valued based on quoted market prices. In cases where market quotations are not available, management relies on appraisals, assumptions and other methods to estimate fair value. For certain alternative investments, management uses Net Asset Value ("NAV") as the practical expedient to determine fair value. The Institute's investment valuation policies are discussed in detail in Note 4.

Net realized and change in unrealized gains and losses are calculated using the average cost of investments and are recognized in *Net investment earnings in* the Consolidated Statements of Activities. Investment income, including interest, is accrued as earned. Dividend income is recorded on the ex-dividend date.

Derivatives, such as futures, options, swap contracts, and foreign currency forward contracts are recorded at fair value with the resulting gain or loss recognized in the *Net investment earnings* financial statement line item.

Land, Buildings, Laboratory Space, and Equipment

Costs of constructing and renovating laboratory space occupied by investigators or other HHMI laboratory heads, and improvements in excess of the Institute's capitalization threshold, are currently capitalized and amortized over the lesser of 5 years or the remaining appointment term of the investigator or other HHMI laboratory head for whom renovations are being made. Buildings, building improvements, and equipment having a useful life of more than one year and a unit cost that exceeds the Institute's capitalization threshold are capitalized. Interest paid on construction debt is capitalized as a component of the building cost. Repair and maintenance costs are expensed as incurred.

Depreciation is computed using the straight-line method over the estimated useful lives as follows:

Classification	Estimated Useful Life (years)
Equipment and furniture	5
Leasehold improvements	5-10
Land improvements	20
Buildings	35

Upon the sale or retirement of land, buildings, laboratory space, or equipment, the related cost and accumulated depreciation are removed from the Consolidated Statements of Financial Position and the resulting gains or losses are reflected in the Consolidated Statements of Activities.

Leases

Lease agreements, which for financial statement purposes include the space arrangements reflected in collaboration agreements with host institutions, are evaluated to determine whether they are capital or operating leases in accordance with Accounting Standards Codification ("ASC") 840, *Leases* ("ASC 840"). If substantially all of the risks and benefits of property ownership have been transferred to the Institute, as determined by the criteria in ASC 840, the lease then qualifies as a capital lease. Capital leases are capitalized at the lower of the net present value of the total amount of rent payable under the leasing agreement or the fair market value of the leased asset. Capital lease assets are depreciated on a straight-line basis over a period consistent with the Institute's depreciation policy for equipment. Interest charges are expensed over the period of the lease in relation to the carrying value of the capital lease obligation.

Grant Commitments

The Institute awards domestic and international grants for periods generally ranging from one to five years. Awards may be deferred by the Institute in its discretion, if the awardee requests deferral. Deferred awards continue to be unconditional commitments for which there are no additional contingencies, and are included in the grant commitment liability at August 31, 2019. For multi-year awards, grant commitments are recorded as expenses in the Consolidated Statements of Activities in the year the grant commitment is made, and the present value of the grant commitment liability is reflected in the Consolidated Statements of Financial Position. The discount rate used to arrive at the present value of future payments is based on the rates for U.S. Treasury Notes with maturities in the years in which the payments will be made.

Insurance

The Institute generally self-insures for property and casualty risks. Third party insurance is purchased from time to time in response to specific needs.

Income Taxes

The Institute is a public charity and qualifies as a tax-exempt organization under Section 501(c)(3) of the Internal Revenue Code and equivalent state provisions, except with regard to unrelated business income which is taxable at corporate income tax rates. The Tax Cuts and Jobs Act (the "Act") enacted on December 22, 2017 includes a new excise tax on executive compensation, increases unrelated business taxable income (UBTI) by the amount of certain fringe benefits for which a deduction is not allowed, changes the net operating loss rules, repeals the alternative minimum tax (AMT), and requires computation of UBTI separately for each unrelated trade or business. Further, the Act reduces the U.S. federal corporate tax rate and federal corporate unrelated business income tax rate from 35% to 21%. As a result of the changes to the Code under the Act, the Institute has estimated a provision for income taxes related to expected future unrelated business taxable income and net operating loss carryforwards expected to be utilized in future years.

Income taxes are reported under the asset and liability method, which requires the recognition of deferred tax assets and liabilities for the expected future tax consequences of events that have been included in the financial statements. Under this method, the Institute determines deferred tax assets and liabilities on the basis of the differences between the financial statement and tax bases

of assets and liabilities by using enacted tax rates in effect for the year in which the differences are expected to reverse. The effect of a change in tax rates on deferred tax assets and liabilities is recognized in income in the period that includes the enactment date.

Deferred tax assets are recognized to the extent that these assets are more likely than not to be realized. In making such a determination, the Institute considers all available positive and negative evidence, including future reversals of existing taxable temporary differences, projected future taxable income, tax-planning strategies, and results of recent operations. The Institute records a valuation allowance against deferred tax assets to the extent that the Institute estimates that they are 50 percent or less likely to be realized. The Institute assesses the valuation allowance annually and any changes to the valuation allowance are recorded as a component of the provision for income taxes in the year recognized.

In accordance with the guidance on accounting for uncertainty in income taxes, management regularly evaluates its tax positions and does not believe the Institute has any uncertain tax positions that result in a material impact on the Institute's consolidated financial position or change in total net assets. The Institute is subject to routine audits by taxing jurisdictions. The Institute believes it is no longer subject to income tax examinations for fiscal years prior to August 31, 2015.

Reclassifications

With the implementation of Accounting Standard Update ("ASU") 2016-14, *Not-for-Profit Entities (Topic 958): Presentation of Financial Statements of Not-for-Profit Entities*, the Institute recast certain operating expenses within the Medical research, Science education and other scientific programs, and General and Administrative financial statement line items on the Consolidated Statements of Activities for fiscal year 2018. This reclassification had no impact on the reported change in net assets.

(In thousands)

	For the period ended August 31, 2018 (Recast)	For the period ended August 31, 2018	Change
Expenses			
Program activities			
Medical research	$ 587,784	$ 562,094	$ 25,690
Science education and other scientific programs	87,752	85,408	2,344
General and administrative	120,506	83,618	36,888
Interest expenses	-	64,922	(64,922)
Total expenses	$ 796,042	$ 796,042	$ -

Recent Accounting Pronouncements

Standards adopted in the current year:

In May 2014, the FASB issued ASU 2014-09, *Revenue from Contracts with Customers (Topic 606)*. Under this standard, recognition of revenue from customer contracts is a principles-based framework. This framework ensures that entities appropriately reflect the consideration to which they expect to be entitled in exchange for goods and services by allocating transaction price to identified performance obligations and recognizing revenue as performance obligations are satisfied. Qualitative and quantitative disclosures are required to enable users of financial statements to understand the nature, amount, timing, and uncertainty of revenue and cash flows arising from contracts with customers. This update is effective for annual reporting periods beginning after December 15, 2017. The Institute adopted ASU 2014-09 in fiscal year 2019 and its adoption did

not have a material impact on the Institute's consolidated financial statements and disclosures. The Institute used the modified retrospective method applied to contracts that had remaining obligations as of September 1, 2018. Under this approach, the Institute did not restate the comparative period in the consolidated financial statements.

In August 2016, the FASB issued ASU 2016-14, *Not-for-Profit Entities (Topic 958): Presentation of Financial Statements of Not-for-Profit Entities*. This update to the presentation of financial statements for not-for-profit entities makes targeted improvements to the current financial reporting model for not-for-profit entities. The standard imposes several new requirements related to reporting net asset classes, expenses, including providing information about expenses by their function and natural classification, and liquidity. The Institute adopted ASU 2016-14 in fiscal year 2019 with retrospective changes to fiscal year 2018.

In August 2016, the FASB issued ASU No. 2016-15, Statement of Cash Flows (Topic 230): Classification of Certain Cash Receipts and Cash Payments. This update provides clarification on the cash flow classification of eight specific cash flow issues. The Institute adopted ASU 2016-15 in fiscal year 2019, with retrospective changes to fiscal year 2018, which requires cash payments for debt prepayment or other debt extinguishment costs, including third-party costs, premiums paid, and other fees paid to lenders that are directly related to the debt prepayment or extinguishment, be classified as financing activities in the statement of cash flows. The Institute redeemed long-term debt in fiscal year 2019 and applied the guidance accordingly.

Standards effective in future years:
In June 2018, the FASB issued ASU 2018-08, *Not-for-Profit Entities (Topic 958): Clarifying the Scope and the Accounting Guidance for Contributions Received and Contributions Made*. The new guidance provides a robust framework for determining (1) whether transactions should be accounted for as contributions or exchange transactions, and (2) determining whether a contribution is conditional. The new standard is effective for contributions made for fiscal years beginning after December 15, 2018 and contributions received for fiscal years beginning after June 15, 2018. The Institute is evaluating the impact of the new guidance for contributions made to its consolidated financial statements and disclosures. Although the Institute adopted the new guidance for contributions received in fiscal year 2019, it did not have a material impact to the Institute's consolidated financial statements and disclosures.

In March 2017, the FASB issued ASU 2017-07, C*ompensation – Retirement Benefits (Topic 715): Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost*. The amendment requires an employer to disaggregate the service cost component from other components of net benefit cost. The service cost component will be presented in the same line or items as other compensation costs arising from services rendered by the pertinent employees during the period. The other components (interest cost, amortization of prior service cost, and amortization of net gain/loss) will be reported separately outside of operations and will not be eligible for capitalization. This ASU is effective for fiscal years beginning after December 15, 2018. The Institute is evaluating the impact of the new guidance to its consolidated financial statements and disclosures.

In November 2016, the FASB issued ASU 2016-18, Statement of Cash Flows (Topic 320): *Restricted Cash,* which requires cash and cash equivalents with restrictions on withdrawal or use to be included in total cash and cash equivalents in the statement of cash flows. This ASU is effective for fiscal years

beginning after December 15, 2018. The Institute is evaluating the impact of the new guidance to its consolidated financial statements and disclosures.

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)*. This new standard establishes a right-of-use ("ROU") model that requires a lessee to record a ROU asset and a lease liability on the balance sheet for all leases with terms longer than 12 months. Leases will be classified as either finance or operating, with classification affecting the pattern of expense recognition in the statement of operations and changes in net assets. The new standard is effective for fiscal years beginning after December 15, 2018. A modified retrospective transition approach is required for lessees for capital and operating leases existing at, or entered into after, the beginning of the earliest comparative period presented in the financial statements, with certain practical expedients available. The Institute completed an evaluation of the new standard and is prepared to implement the new standard during fiscal year 2020.

In January 2016, the FASB issued ASU No. 2016-01, *Financial Instruments-Overall: Recognition and Measurement of Financial Assets and Financial Liabilities*. ASU 2016-01 requires equity investments to be measured at fair value, with changes in fair value recognized in net income. Equity investments for which fair value is not readily determinable may be measured at cost, minus impairment, and plus or minus adjustments for observable price changes. ASU 2016-01 also requires financial liabilities that an entity has elected to measure at fair value, to be presented separately, in other comprehensive income, the portion of the change in fair value that results from a change in instrument-specific credit risk. Under the ASU, non-public business entities will no longer be required to disclose the fair value of financial instruments measured at amortized cost. ASU 2016-01 will be effective for entities (other than public business entities) for fiscal years beginning after December 15, 2018. The Institute is evaluating the impact of the remainder of the new guidance to its consolidated financial statements and disclosures.

3. LIQUIDITY AND AVAILABILITY OF RESOURCES

The Institute's financial assets available within one year of the Consolidated Statement of Financial Position date for general expenditures, construction costs, liabilities, and other obligations as they come due are as follows:

(In thousands)		
Total assets as of August 31, 2019	$	22,544,412
Less:		
Investments not available for redemption within one year		(8,214,436)
Deferred income taxes		(12,895)
Prepaid expenses and other assets		(63,495)
Land, buildings, laboratory space, and equipment, net		(749,921)
Financial assets available to meet cash needs for general expenditures within one year	$	13,503,665

As part of the Institute's liquidity management, it has a policy to manage the endowment in a manner that will fund the programs and supporting functions in perpetuity and balance long-term growth

with the need for stability of investment returns and liquidity. The Institute's investment approach for the endowment is governed by a risk-based asset framework that seeks to assure the sum of the parts is consistent with the Institute's long-term spending goals and tolerance for risk. The endowment's asset allocation framework consists of four Asset Groups: High Risk/Return Assets, Global Equity, Diversifying Assets, and Bonds, each with its own defined risk and return terms. The Institute's long-term investment goal for the endowment is to maximize investment returns without materially exceeding the risk inherent in its strategic benchmark, which consists of a portfolio invested 65% in the broad stock market and 35% in the bond market. As of August 31, 2019, the Institute had approximately $13.5 billion of financial assets available within one year to meet cash needs for general expenditures, construction costs, liabilities, and obligations as they come due. None of the financial assets are subject to restrictions that make them unavailable for general expenditure within one year of the date of the Consolidated Statement of Financial Position.

4. INVESTMENTS

The Institute elected to apply the fair value option of ASC 825, "Financial Instruments," to our portfolio of investments. As such, Investments, as shown on the Consolidated Statements of Financial Position, are presented at fair value in accordance with U.S. GAAP. The investment categories, valuation methodology, fair value hierarchy, and related commitments for fiscal years August 31, 2019 and 2018 are discussed below.

Investment Categories and Valuation Policy

Investments are categorized by asset class and valued as described below:

Equity investments primarily consist of direct ownership of public and private companies in the form of common stock. Investments in listed securities on exchanges are typically valued based on last quoted market prices on the last trading date of the principal market on or before August 31. Investments in private companies are valued by management based on the best available information in the circumstance and may require significant management judgment. The majority of the Institute's equity investments are publicly traded.

Fixed income securities primarily consist of actively traded fixed income securities, including U.S. Treasury Notes/Bonds/Bills, and private placement debt. Fixed income securities, excluding U.S. Treasury Bills, are valued by independent pricing sources, broker dealers or pricing models that factor in, where applicable, recently executed transactions, interest rates, bond or credit default spreads and volatility. The U.S. Treasury Bills are recorded at amortized cost which approximates fair value. Certain private placement debt that is directly linked with equity ownership in alternative investments is primarily valued by external investment managers. These values are adjusted, if applicable, by management as described under *Valuation Methodology*. The majority of the Institute's fixed income investments are issued by the U.S. Treasury.

Preferred securities primarily consist of direct ownership of public and private companies in the form of preferred stock. Investments in publicly traded companies are valued based on readily available market quotations obtained from independent pricing sources. Investments in private companies with an available OTC market are valued using quotes from broker dealers or pricing models that factor in, where applicable, recently executed transactions, interest rates, bond or credit default spreads and volatility. Investments in private companies with no OTC market are valued based on the best available information in the circumstance and may require significant management judgment.

Convertible securities primarily consist of direct ownership of public and private companies in the form of preferred stock or bonds that contain a conversion covenant, usually into common stock. Investments in publicly traded companies are valued based on readily available market quotations obtained from independent pricing sources. Investments in private companies with an available OTC market are valued using quotes from broker dealers or pricing models that factor in, where applicable, recently executed transactions, interest rates, bond or credit default spreads and volatility. Investments in private companies with no OTC market are valued based on the best available information in the circumstance and may require significant management judgment.

Alternative investments represent interests in funds, limited partnerships, and other pooled vehicles. The Institute classifies these investments in the following sub-categories:

- *Private equity investments* include venture capital, buyout strategies, and energy-related investments usually structured as limited partnerships or other similar pass-through vehicles. In general, these investments are held to the term of the investment and have limited liquidity. Distributions from these investments are primarily received through liquidation of the underlying assets.
- *Hedged equity investments* include long/short equity strategies which are managed with moderate net exposure and event-driven strategies with the objective of achieving long term equity-like returns with lower volatility. In most cases, these funds are redeemable at periodic intervals.
- *Distressed and credit sensitive investments* include long credit, long/short credit, and distressed credit strategies. In general, these investments are held to the term of the investment and have limited liquidity. Distributions from these investments are primarily received through liquidation of the underlying assets.
- *Equity commingled investments* include equity funds that invest in primarily long public securities traded on major stock exchanges. In most cases, these funds are redeemable at periodic intervals.
- *Real asset investments* include private market investments secured by hard assets such as real estate, power plants, commodity reserves and other assets. These investments are usually structured as limited partnerships or other similar pass-through vehicles. In general, these investments are held to the term of the investment and have limited liquidity. Distributions from these investments are primarily received through liquidation of the underlying assets.
- *Market neutral investments* include long/short equity strategies which are managed with a close to zero net exposure and multi-strategy relative value investment approach with the objective to generate positive returns above the risk-free rate that have little or no correlation with public equities. In most cases, these funds are redeemable at periodic intervals.

The Institute has an active co-investment program. Investments held through this program are classified in one of the above alternative categories if they are structured as limited partnerships or other similar pass-through vehicles. If the co-investment is owned by the Institute directly, the investment is categorized as a private company investment in equity, fixed income, preferred securities or convertible securities, as applicable.

The fair value of alternative investments is primarily based on the NAV reported or calculated by the respective external investment managers and is adjusted, if applicable, as described under *Valuation Methodology*. Private company co-investments and funds that do not report NAV are valued by

management based on the best available information in the circumstance and may require significant management judgment.

Derivatives are used by the Institute to manage its exposure to certain risks relating to ongoing business and investment operations. Derivatives include futures contracts, foreign currency forward contracts, options, contracts for difference, participatory contracts, and various swap contracts. The fair value of derivative investments is determined based on the type of derivative. Listed futures and options, and foreign currency forward contracts are valued by independent pricing sources. Contracts for difference and participatory notes are equity market access products and are typically valued based on changes in price of the underlying equity, adjusted for any financing costs. Swaps and other OTC derivatives are valued by the calculation agent of the contract, which is usually the counterparty to the contract, or by independent pricing sources where available, based on the terms of the contract and other observable inputs.

Short positions are used by the Institute in anticipation of a decline in the market value of an investment. In a physical short sale, the Institute is required to pay the lender any dividends or interest, which accrues during the period of the loan. The Institute is then obligated to return the security borrowed by purchasing it at market price at the time of replacement. The price of the security at replacement may differ from the price at which the security was sold. The Institute will incur a loss, as a result of the short sale, if the price of the security increases between the date of the short sale and when the fund replaces the borrowed security. This loss may be unlimited. The Institute will realize a gain if the security declines in price between those dates. The amount of any gain will be decreased, and the amount of any loss increased, by the amount of any premium, dividends or interest the Institute may be required to pay in connection with a short sale.

Valuation Methodology

Valuation techniques applied to the Institute's investments can include a combination of both observable and unobservable inputs. The Institute's investments in equities, fixed income securities, preferred securities and convertible securities are valued based on quoted market prices in active markets on a trade-date basis or by independent pricing sources, whenever available. Where such inputs do not exist, fair value measurements are based on the best available information such as broker quotes, models or other valuation methodologies that require varying degrees of management judgment.

NAV is used as a practical expedient in determining fair value for investments which (a) do not have a readily determinable fair value and (b) are an investment company as defined under ASC 946, *Financial Services – Investment Companies*, or have attributes of an investment company and issue financial statements consistent with the principles in ASC 946.

The NAV is reported by the Institute's external investment managers, administrators and general partners in accordance with their policies as described in their respective financial statements and offering memoranda. For certain investments, the most recent NAV reported is adjusted for cash flows and significant known valuation changes, if any, of its related portfolio through August 31, 2019 and 2018, respectively. Management reviews the valuation policies and financial reporting of managers and performs due diligence, as applicable, to obtain an understanding of the valuation processes used by the third party for suitability and appropriateness for use in the Institute's financial statements. Management believes the Institute's allocated share of the carrying amount of these alternative

investments is a reasonable estimate of fair value. The majority of the Institute's alternative investments qualify for use of NAV as a practical expedient in accordance with ASC 820 – *Fair Values Measurements and Disclosures*.

For the remaining alternative investments, the Institute considers various factors to estimate fair value including the timing of the transaction, market factors, comparable transactions, company performance and company projections. The selection of an appropriate valuation technique may be affected by the availability and general reliability of relevant inputs. These fair value estimates are subject to the review and approval of the Institute's Valuation Committee.

The Institute's Valuation Committee is comprised of the Chief Investment Officer, the Managing Director - Head of Investment Operations, the Manager, Investment Operations, and the Director, Investment Fund Services. The Institute's overall valuation methodology and its application is subject to review and oversight by the Valuation Committee, who meet quarterly to review and assess the valuation techniques applied and to consider new methodologies or recommend changes as appropriate. Once selected for an investment, valuation techniques are consistently applied. The Valuation Committee has sole authority to make overrides to the current valuation methodology or technique for a specific investment. A change in a valuation technique or its application will be made only if the change results in a measurement that management believes is more representative of fair value in the circumstances. There have been no changes in the valuation methodology for the fiscal years ending August 31, 2019 and 2018. Although the Valuation Committee believes its valuation methods are appropriate and consistent, these methods may produce a fair value estimate that may not be indicative of the ultimate net realizable value, or reflective of future fair values.

Fair Value Hierarchy

The fair value hierarchy, as required by ASC 820, prioritizes the use of market-based information over entity-specific information and establishes a three-level hierarchy for fair value measurement based on the transparency of information, such as the pricing source used in the valuation of an asset or liability as of the measurement date. It consists of observable and unobservable inputs at three levels. Observable inputs are based on market data obtained from sources independent of the reporting entity; unobservable inputs are based on the best information available in the circumstances.

- Level 1 inputs consist of quoted prices in active markets for identical assets or liabilities.

- Level 2 inputs are from sources other than quoted prices that are observable for an asset or liability, either directly or indirectly. Level 2 inputs include quoted prices for similar assets or liabilities in active markets, interest rates and yield curves observable at commonly quoted intervals, volatilities, prepayment speeds, loss severities, credit risks, default rates, and market corroborated inputs that are derived principally from or corroborated by observable market data by correlation or other means.

- Level 3 inputs are unobservable inputs for the asset or liability. They are used to measure fair value when observable inputs are not available, including situations in which there is little, if any, market activity for the asset or liability at the measurement date.

The asset or liability's fair value measurement level within the fair value hierarchy is based on the lowest level of any input that is significant to the fair value measurement.

The following tables present the financial instruments carried at fair value as of August 31, 2019 and 2018 according to the valuation hierarchy defined above.

August 31, 2019
(In thousands)

	Quoted Market Prices (Level 1)	Other Observable Inputs (Level 2)	Unobservable Inputs (Level 3)	Total Fair Value
Assets				
Deferred compensation plan assets	$ 46,800	$ -	$ 6,967	$ 53,767
Fixed income securities[1]	-	14,256	-	14,256
Investments:				
Equity	3,602,816	-	68,635	3,671,451
Fixed income securities	-	1,536,286	16,704	1,552,990
Preferred securities	19,123	7,769	18,984	45,876
Convertible securities	-	2,654	-	2,654
Alternative investments	-	-	176,622	176,622
Derivatives	-	13,818	-	13,818
Total	3,621,939	1,560,527	280,945	5,463,411
Alternative investments measured under the NAV-practical expedient				15,244,130
Total investments	3,621,939	1,560,527	280,945	20,707,541
Total assets at fair value	$ 3,668,739	$ 1,574,783	$ 287,912	$ 20,775,564
Liabilities				
Investments and derivatives:				
Equity short positions	$ 499,189	$ 1,747	$ -	$ 500,936
Preferred short positions	6,996	-	-	6,996
Fixed income short positions	6,784	-	-	6,784
Derivatives	8	213,835	-	213,843
Total investments and derivatives	$ 512,977	$ 215,582	$ -	$ 728,559

[1]Fixed income securities include investments in U.S. Treasury Bills reported in the *Escrowed bond proceeds* financial statement line item on the Consolidated Statements of Financial Position.

August 31, 2018
(In thousands)

	Quoted Market Prices (Level 1)	Other Observable Inputs (Level 2)	Unobservable Inputs (Level 3)	Total Fair Value
Assets				
Deferred compensation plan assets	$ 43,970	$ -	$ 5,966	$ 49,936
Investments:				
Equity	4,100,455	-	79,057	4,179,512
Fixed income securities	-	2,231,208	28,787	2,259,995
Preferred securities	17,361	14,796	12,106	44,263
Convertible securities	-	-	-	-
Alternative investments	-	-	239,560	239,560
Derivatives	53	14,978	-	15,031
Total	4,117,869	2,260,982	359,510	6,738,361
Alternative investments measured under the NAV-practical expedient				15,361,842
Total investments	4,117,869	2,260,982	359,510	22,100,203
Total assets at fair value	$ 4,161,839	$ 2,260,982	$ 365,476	$ 22,150,139
Liabilities				
Investments and derivatives:				
Equity short positions	$ 466,004	$ -	$ -	$ 466,004
Preferred short positions	5,110	-	-	5,110
Real assets short positions	524	-	-	524
Derivatives	89	104,512	-	104,601
Total investments and derivatives	$ 471,727	$ 104,512	$ -	$ 576,239

The following table presents the purchases and transfers for instruments classified within Level 3 of the fair value hierarchy as defined above for the years ended August 31, 2019 and 2018:

(In thousands)

Fair value measurements using significant unobservable inputs	For the year ended August 31, 2019			For the year ended August 31, 2018		
	Purchases	Transfers in	Transfers out	Purchases	Transfers in	Transfers out
Deferred compensation funds	$ 794	$ -	$ -	$ 159	$ -	$ -
Investments:						
Equity	24,251	-	-	14,858	-	-
Fixed income securities	2,386	-	-	2,024	-	(2,317)
Preferred securities	1,993	-	-	11,949	-	-
Alternative investments	34,650	-	(75,700)	19,200	17,000	(8,745)
Total investments	63,280	-	(75,700)	48,031	17,000	(11,062)
Totals	$ 64,074	$ -	$ (75,700)	$ 48,190	$ 17,000	$ (11,062)

The table above excludes those investments valued using NAV as the practical expedient as outlined in ASU 2015-07, *Fair Value Measurement (Topic 820): Disclosures for Investments in Certain Entities that Calculate NAV per Share (or its Equivalent)*.

Management continuously reviews and evaluates financial reporting investment levels and modifies them as necessary. During the fiscal years ended August 31, 2019 and 2018, the transfers in and out of the Level 3 classifications resulted from a change in valuation inputs received from the external investment manager, thus changing the classification of the investment to being reported using NAV.

Level 3 Valuation Techniques and Unobservable Inputs

The following table summarizes the unobservable inputs and assumptions used for items categorized in Level 3 of the fair value hierarchy as of August 31, 2019 and 2018, respectively. For each investment category and respective valuation technique, the range of the inputs is dependent on the nature and characteristics of the investment. The range of inputs listed below represent values as of the measurement date; however, these inputs may change over time which may have a material effect on the valuation of these types of investments in the future.

August 31, 2019
(In thousands)

Asset Class	Fair Value 2019	Valuation Techniques	Unobservable Inputs	Range of Inputs
Deferred compensation funds	$ 6,967	Discounted cash flows	Risk-adusted discount rate	3.25% - 4.50%
Equity	48,057	Market/Income approach	EBITDA multiple	6.4x
	20,578	Discounted cash flows	Discount rate	0.0% - 12%
Fixed income	1,946	Market/Income approach	EBITDA multiple	11.6x
	14,757	Cost plus accrued interest	Interest rate	0.0% - 10%
Preferred securities	13,345	Market/Income approach	EBITDA multiple	5.0x - 14.3x
	4,595	Discounted cash flows	Discount rate	10% - 12%
	1,044	Appraised value	Appraisal values	n/a
Alternatives	98,567	Market/Income approach	EBITDA multiple	5.0x - 15.0x
	2,349	Market/Income approach	Third party valuation	n/a
	59,685	Appraised value	Appraisal values	n/a
	12,924	Amortized cost	n/a	n/a
	3,098	Discounted cash flows	Discount rate	10% - 15%
Total	$ 287,912			

August 31, 2018
(In thousands)

Asset Class	Fair Value 2018	Valuation Techniques	Unobservable Inputs	Range of Inputs
Deferred compensation funds	$ 5,966	Discounted cash flows	Risk-adusted discount rate	3.25% - 4.50%
Equity	46,297	Market/Income approach	EBITDA multiple	7.0x - 16.0x
	7,456		Multiples & Third party offer	n/a
	25,304	Discounted cash flows	Discount rate	0% - 12%
Fixed income	28,787	Cost plus accrued interest	Interest rate	0% - 10%
Preferred securities	6,477	Market/Income approach	EBITDA multiple	6.0x - 17.5x
	4,683	Discounted cash flows	Discount rate	10% - 12%
	655	Appraised value	Appraisal values	n/a
	291	Recent transaction price	n/a	n/a
Alternatives	76,236	Market/Income approach	EBITDA multiple	4.5x - 17.5x
	3,572		Comparables	n/a
	133,130	Appraised value	Appraisal values	n/a
	18,075	Amortized cost	n/a	n/a
	8,547	Discounted cash flows	Discount rate	10% - 15%
Total	$ 365,476			

Alternative Investments at NAV

The following tables summarize investments for which the Institute uses NAV as the practical expedient and the respective unfunded commitments and redemption terms as of August 31, 2019 and 2018, respectively:

August 31, 2019
(In thousands)

	Fair Value as of August 31, 2019	Unfunded Commitment	Redemption Terms & Restrictions
Private equity	$ 4,181,324	$ 1,917,624	Not redeemable and held for the life of the investment.
	$ 171,575	$ 516,603	
Hedged equity	1,881,990	70,000	Lockup provisions may include one-time or revolving terms ranging from 1-3 years. Investments with expired one-time lockup or no lockup provisions are redeemable on a periodic basis with advance notice of 30-180 days. Investments with revolving lockup provisions are redeemable with advance notice of 60-90 days prior to the next lockup expiration date. Special investments, a.k.a side pockets, are redeemable upon liquidation of the designated investment.
	176,255	50,000	Not redeemable and held for the life of the investment.
Distressed & credit sensitive	1,021,202	863,859	Not redeemable and held for the life of the investment.
	875,171	835,099	Lockup provisions may include a one-time term of up to 1 year. Investments with expired one-time lockup or no lockup provisions are redeemable on a periodic basis with advance notice of 30-90 days.
Equity commingled	3,196,770	240,000	Lockup provisions may include one-time or revolving terms ranging from 1-3 years. Investments with expired one-time lockup or no lockup provisions are redeemable on a periodic basis with advance notice of 30-180 days. Investments with revolving lockup provisions are redeemable with advance notice of 30-90 days prior to the next lockup expiration date.
Real assets	856,627	481,660	Not redeemable and held for the life of the investment.
	194,312	140,394	Investments with expired one-time lockup or no lockup provisions are redeemable on a periodic basis with advance notice of 30 days.
Market neutral	2,688,845	-	Investments with expired one-time lockup or no lockup provisions are redeemable on a periodic basis with advance notice of 5-100 days.
	59	4,400	Not redeemable and held for the life of the investment.
Total alternative investments	$ 15,244,130	$ 5,119,639	

August 31, 2018
(In thousands)

	Fair Value as of August 31, 2018	Unfunded Commitment	Redemption Terms & Restrictions
Private equity	$ 4,037,181	$2,335,645	Not redeemable and held for the life of the investment.
Hedged equity	2,199,769	-	Lockup provisions may include one-time or revolving terms ranging from 1-3 years. Investments with expired one-time lockup or no lockup provisions are redeemable on a periodic basis with advance notice of 30-180 days. Investments with revolving lockup provisions are redeemable with advance notice of 60-90 days prior to the next lockup expiration date. Special investments (side pockets) are redeemable upon liquidation of the designated investment.
	98,220	130,902	Not redeemable and held for the life of the investment.
Distressed & credit sensitive	1,267,797	1,283,671	Not redeemable and held for the life of the investment.
	930,505	64,750	Lockup provisions may include a one-time term of up to 1 year. Investments with expired one-time lockup or no lockup provisions are redeemable on a periodic basis with advance notice of 30-90 days.
Equity commingled	3,168,389	-	Lockup provisions may include one-time or revolving terms ranging from 1-3 years. Investments with expired one-time lockup or no lockup provisions are redeemable on a periodic basis with advance notice of 30-180 days. Investments with revolving lockup provisions are redeemable with advance notice of 30-90 days prior to the next lockup expiration date.
Real assets	885,938	623,931	Not redeemable and held for the life of the investment.
	198,553	-	Investments with expired one-time lockup or no lockup provisions are redeemable on a periodic basis with advance notice of 30 days.
Market neutral	2,568,357	-	Investments with expired one-time lockup or no lockup provisions are redeemable on a periodic basis with advance notice of 5-100 days.
	7,133	4,400	Not redeemable and held for the life of the investment.
Total alternative investments	$ 15,361,842	$4,443,299	

As noted above, the Institute has made contractual commitments to fund various investments. The Institute has unfunded commitments totaling approximately $5.2 billion and $4.5 billion (of which $0.0 billion and $0.1 billion relate to commitments to fund investments valued using a method other than NAV) to fund investments in non-public entities as of August 31, 2019 and 2018, respectively. The Institute expects these commitments to be called over the next 1 to 7 years.

Obligations under Security Lending Agreements

The Institute may lend its securities to approved borrowers to earn additional income. Its securities lending activities are administered by a lending agent in accordance with a securities lending agreement. Security loans generally do not have stated maturity dates, and the fund may recall a

security at any time. The Institute receives collateral in the form of cash, government debt securities, corporate debt securities, equity securities, and other types of securities as agreed to in the securities lending agreement. Collateral for loans of domestic securities and foreign securities that are denominated and payable in dollars are collateralized at a minimum of 102% and other foreign securities are collateralized at a minimum of 105% of the value of the securities on loan. Collateral is maintained over the life of the loan in an amount not less than the value of loaned securities; any additional collateral required due to changes in security values is delivered to the Institute the next business day. Cash collateral is invested in accordance with investment guidelines defined by the securities lending agreement. Additionally, the lending agent indemnifies the Institute against losses resulting from borrower default and against losses resulting from the investment of cash collateral in repurchase transactions resulting from counterparty default. Although risk is mitigated by the collateral and indemnification, the Institute could experience a delay in recovering its securities and a possible loss of income or value if the borrower fails to return the securities, collateral investments decline in value, and the lending agent fails to perform. Securities lending revenue consists of earnings on invested collateral and borrowing fees, net of any rebates to the borrower, compensation to the lending agent, and other administrative costs. In accordance with GAAP, investments made with cash collateral are reflected in the accompanying financial statements, but collateral received in the form of securities is not. The value of cash collateral was $40.8 million and $170.4 million as of August 31, 2019 and 2018, respectively. The market value of loaned securities was $543.8 million and $387.7 million as of August 31, 2019 and 2018, respectively, and are included in the Consolidated Statements of Financial Position in *Investments*. The market value of cash and non-cash collateral was $562.6 million and $409.5 million at August 31, 2019 and 2018, respectively. Income from securities lending activities totaled approximately $0.9 million and $0.1 million for August 31, 2019 and 2018, respectively, and is included in *Net investment earnings*.

5. DERIVATIVES

The Institute invests in derivative financial instruments to control market risks, manage its portfolio exposure, reduce investment implementation costs, and enhance returns. Derivatives are recorded at fair value with the resulting gain or loss recognized in the Consolidated Statements of Activities. The Institute seeks to transact with counterparties that are operating under master netting agreements for derivative trades. These agreements may allow the Institute to offset amounts owed by the counterparty with amounts payable to the same counterparty. These agreements may permit net settlement of multiple transactions with that counterparty. As a result of investing in derivative financial instruments, the Institute is exposed to potential credit-related losses in the event of nonperformance by counterparties. The Institute limits its exposure by evaluating the creditworthiness of potential counterparties before investing.

Swap, OTC option, forward contracts and other OTC derivative contracts expose the Institute to credit risk arising from the potential inability of counterparties to perform under the terms of the contracts. The notional amounts of these contracts do not represent the Institute's risk of loss due to counterparty nonperformance. The Institute's exposure to credit risk associated with counterparty nonperformance for these contracts is limited to the fair value of such contracts and any related collateral placed with the counterparty, after enforcing any master netting agreements with counterparties that allow the Institute to offset amounts owed by the counterparty with amounts payable to the same counterparty. As of August 31, 2019, the aggregate fair value of all derivative contracts by counterparty after applying netting arrangements and before including the

effects of collateral that are in a net asset position is insignificant, thus the Institute's credit exposure to each counterparty is considered immaterial.

Derivatives contracts are subject to various risks similar to non-derivative instruments. For non-exchange traded derivatives under standard derivatives agreements, the Institute may be required to post collateral for initial margin and also variation margin in the event of a net liability position exceeding certain amounts with the counterparty. Additionally, the counterparty may, upon providing notice and allowing for any applicable cure period, terminate derivatives contracts if the Institute fails to maintain sufficient asset coverage for its contracts or its net assets decline by stated percentages. The Institute posted collateral as of August 31, 2019 and 2018 of approximately $86.4 million and $49.3 million, respectively, in the normal course of business and these amounts are included in *Due from Brokers* on the Consolidated Statements of Financial Position. The Institute received no collateral related to derivatives contracts as of August 31, 2019 and 2018.

The following tables present the derivatives held as of August 31, 2019 and 2018, respectively, by their primary underlying risk exposure. These derivatives are not designated as hedging instruments under ASC 815, *Derivatives and Hedging*.

(In thousands)

	As of August 31, 2019		For the year ended August 31, 2019	
Primary Risk Exposure	Gross derivative assets	Gross derivative liabilities	Net realized gains/(losses)	Net unrealized gains/(losses)
Equity Instruments				
Equity swaps	$ -	$ 293	$ 5,118	$ 140
Contracts for difference	8,401	7,615	12,824	(2,326)
Total equity instruments	8,401	7,908	17,942	(2,186)
Fixed income instruments				
Fixed income futures	-	-	207	36
Interest rate swaps	154	196,272	-	(105,525)
Total fixed income instruments	154	196,272	207	(105,489)
Currency instruments				
Currency exchange contracts	5,263	9,663	(15,955)	(2,780)
Total currency instruments	5,263	9,663	(15,955)	(2,780)
Total	$ 13,818	$ 213,843	$ 2,194	$ (110,455)

The above derivative assets and liabilities are included in *Investments* and *Investment and derivative liabilities*, respectively, on the Consolidated Statements of Financial Position. Net realized gains/(losses) and Net unrealized gains/(losses) are included in *Net investment earnings* on the Consolidated Statements of Activities.

(In thousands)

	As of August 31, 2018		For the year ended August 31, 2018	
Primary Risk Exposure	Gross derivative assets	Gross derivative liabilities	Net realized gains/(losses)	Net unrealized gains/(losses)
Equity Instruments				
Equity swaps	$ -	$ 432	$ (1,667)	$ (432)
Contracts for difference	7,633	4,520	3,542	5,362
Total equity instruments	7,633	4,952	1,875	4,930
Fixed income instruments				
Fixed income futures	53	89	(558)	(36)
Interest rate swaps	5,993	96,587	-	58,299
Total fixed income instruments	6,046	96,676	(558)	58,263
Currency instruments				
Currency exchange contracts	1,352	2,973	992	(2,599)
Total currency instruments	1,352	2,973	992	(2,599)
Total	$ 15,031	$ 104,601	$ 2,309	$ 60,594

The above derivative assets and liabilities are included in *Investments* and *Investment and derivative liabilities*, respectively, on the Consolidated Statements of Financial Position. Net realized gains/(losses) and Net unrealized gains/(losses) are included in *Net investment earnings* on the Consolidated Statements of Activities.

The following tables reflect the Institute's net exposure to various counterparties subject to master netting agreements, where applicable, as of August 31, 2019 and 2018, respectively.

As of August 31, 2019
(In thousands)

	Gross Assets	Gross Liabilities	Net	Cash Collateral Posted (Received)	Net Exposure
Counterparty A	$ 1,660	$ 38,151	$ (36,491)	$ 26,961	$ (9,530)
Counterparty B	1	19	(18)	-	(18)
Counterparty C	1,802	761	1,041	4,465	5,506
Counterparty D	695	1,979	(1,284)	-	(1,284)
Counterparty E	2,548	2,878	(330)	33,590	33,260
Counterparty F	5,881	82,886	(77,005)	14,500	(62,505)
Counterparty G	61	5,837	(5,776)	-	(5,776)
Counterparty H	-	57,840	(57,840)	-	(57,840)
Counterparty I	1	293	(292)	6,840	6,548
Counterparty J	-	21,751	(21,751)	-	(21,751)
Counterparty K	1,169	1,448	(279)	-	(279)
Total	$ 13,818	$ 213,843	$ (200,025)	$ 86,356	$ (113,669)

The above derivative assets and liabilities are included in *Investments* and *Investment and derivative liabilities*, respectively, on the Consolidated Statements of Financial Position. Cash collateral is included in *Due from Brokers* on the Consolidated Statements of Financial Position.

As of August 31, 2018
(In thousands)

	Gross Assets	Gross Liabilities	Net	Cash Collateral Posted (Received)	Net Exposure
Counterparty A	$ 2,242	$ 21,206	$ (18,964)	$ 9,680	$ (9,284)
Counterparty B	44	12	32	-	32
Counterparty C	3,415	38	3,377	2,136	5,513
Counterparty D	1,731	1,978	(247)	-	(247)
Counterparty E	2,081	2,351	(270)	21,016	20,746
Counterparty F	1,649	43,665	(42,016)	11,710	(30,306)
Counterparty G	64	431	(367)	-	(367)
Counterparty H	-	33,183	(33,183)	-	(33,183)
Counterparty I	-	432	(432)	4,750	4,318
Counterparty J	3,751	1,216	2,535	-	2,535
Counterparty K	53	89	(36)	-	(36)
Counterparty L	1	-	1	-	1
Total	$ 15,031	$ 104,601	$ (89,570)	$ 49,292	$ (40,278)

The above derivative assets and liabilities are included in *Investments* and *Investment and derivative liabilities*, respectively, on the Consolidated Statements of Financial Position. Cash collateral is included in *Due from Brokers* on the Consolidated Statements of Financial Position.

Derivative notional amounts and values as of August 31, 2019 and 2018 are indicative of the Institute's exposure to derivatives for the years then ended.

Foreign Exchange Forward Contracts

Foreign exchange forward contracts are over-the-counter contractual agreements primarily used to sell or buy certain amounts of foreign currencies as a means to hedge foreign currency risk or for the purpose of speculating for investment returns in the foreign currency market. The notional value of open forward contract purchases and sales totaled approximately $781.6 million and $504.2 million, respectively, at August 31, 2019, and $318.9 million and $132.8 million, respectively, at August 31, 2018.

Futures

Futures contracts are commitments to purchase or sell a financial instrument at a stated time and price in the future. They are generally used to increase or decrease exposure to a specific market or investment product. These contracts are settled daily to reflect the changes in their market values.

As of August 31, 2019 and 2018, the Institute had entered into various futures contracts with notional exposures as follows:

(In thousands)	2019		2018	
	Buy	Sell	Buy	Sell
Fixed income	$ -	$ -	$ 49,518	$ (178,651)

Contracts for Difference
Contracts for difference are agreements between a buyer and a seller to exchange the difference between the opening value of a share, currency, commodity, index or other tradable financial instrument and its closing value at the end of the contract. Contracts for difference are used by the Institute for the purpose of gaining financial exposure to an underlying security or index without the need to own the underlying shares. As of August 31, 2019 and 2018, the Institute had entered into various contracts for difference with notional exposures at fair values as follows:

(In thousands)	2019		2018	
	Buy	Sell	Buy	Sell
Equity indexes	$ 293,245	$ (228,846)	$ 125,327	$ (154,623)

Equity Swaps
Equity swaps are exchanges of cash flows in which at least one of the sides is an equity instrument. An equity index is a measure of the performance of an individual stock or a basket of stocks. The notional amount of the equity swaps was $27.3 million and $0.2 million as of August 31, 2019 and 2018, respectively.

Debt-related Interest Rate Swaps
An interest rate swap is a derivative in which one party exchanges a stream of interest payments with another party's stream of cash flows. The Institute uses interest rate swap agreements to manage fixed or floating assets and liabilities. Under the terms of the current agreements, the Institute pays a fixed interest rate, determined at inception, and receives a variable rate on the underlying notional principal amount. Refer to Note 8 for information related to interest rates and interest expense on the bonds payable, note payable, and interest rate swaps.

The following tables present the debt-related interest rate swaps including the notional amounts, fair values as of August 31, 2019 and 2018, respectively, and unrealized gains and losses for the years then ended.

August 31, 2019
(In thousands)

		As of August 31, 2019		For the year ended August 31, 2019	
Debt-related interest-rate swaps:	Termination Date	Notional Amount	Gross Derivative (Assets)/Liabilities[1]	Unrealized Gains (Losses)[2]	Fixed Rate[3]
Janelia Research Campus Apartment B	June 1, 2043	$ 33,130	$ 7,414	$ (6,198)	2.10%
Janelia Research Campus Apartment A	October 1, 2039	23,000	6,992	(3,947)	2.75%
Headquarters and conference center	November 1, 2036	76,500	28,468	(12,091)	3.48%
Headquarters and conference center expansion	March 1, 2038	83,500	31,068	(13,885)	3.30%
Janelia Research Campus	February 15, 2038	75,000	26,497	(12,362)	3.19%
	March 1, 2033	150,000	14,337	(18,089)	1.68%
	March 1, 2033	125,000	36,925	(15,719)	3.38%
	March 1, 2033	100,000	29,373	(12,567)	3.36%
	October 1, 2039	50,000	15,198	(8,579)	2.75%
Janelia Commercial Property	May 21, 2022	40,376	(154)	(2,088)	1.14%
Total			$ 196,118	$ (105,525)	

[1]Gross derivative liabilities are included in *Investment and derivative liabilities* on the Consolidated Statements of Financial Position. Gross derivative assets are included in *Investments* on the Consolidated Statement of Financial Position.

[2]Unrealized losses on derivatives are included in *Net investment earnings* on the Consolidated Statements of Activities.

[3]The variable interest rate is reset on a weekly basis except for the note payable which is reset monthly.

August 31, 2018
(In thousands)

		As of August 31, 2018		For the year ended August 31, 2018	
Debt-related interest-rate swaps:	Termination Date	Notional Amount	Gross Derivative (Assets)/Liabilities[1]	Unrealized Gains (Losses)[2]	Fixed Rate[3]
Janelia Research Campus Apartment B	June 1, 2043	$ 33,130	$ 1,216	$ 2,605	2.10%
Janelia Research Campus Apartment A	October 1, 2039	23,000	3,045	1,979	2.75%
Headquarters and conference center	November 1, 2036	76,500	16,377	6,819	3.48%
Headquarters and conference center expansion	March 1, 2038	83,500	17,184	7,735	3.30%
Janelia Research Campus	February 15, 2038	75,000	14,135	6,795	3.19%
	March 1, 2033	150,000	(3,752)	8,633	1.68%
	March 1, 2033	125,000	21,205	10,052	3.38%
	March 1, 2033	100,000	16,806	8,002	3.36%
	October 1, 2039	50,000	6,619	4,302	2.75%
Janelia Commercial Property	May 21, 2022	40,376	(2,242)	1,377	1.14%
Total			$ 90,593	$ 58,299	

[1]Gross derivative liabilities are included in *Investment and derivative liabilities* on the Consolidated Statements of Financial Position. Gross derivative assets are included in *Investments* on the Consolidated Statement of Financial Position.

[2]Unrealized gains on derivatives are included in *Net investment earnings* on the Consolidated Statements of Activities.

[3]The variable interest rate is reset on a weekly basis except for the note payable which is reset monthly.

6. INVESTMENT RECEIVABLES AND PAYABLES

Investment Receivables and Payables

The following table presents the Institute's investment receivables and payables as of August 31, 2019 and 2018, respectively:

(In thousands)

	2019		2018	
	Receivables	Payables	Receivables	Payables
Securities pending settlement	$ 73,436	$ 40,639	$ 37,003	$ 36,992
Interest and dividend	12,630	-	18,317	-
Management fees	-	17,851	-	12,895
Other	-	854	-	757
Total	$ 86,066	$ 59,344	$ 55,320	$ 50,644

7. LAND, BUILDINGS, LABORATORY SPACE, AND EQUIPMENT

The following table presents the cost and accumulated depreciation and amortization of the Institute's investment in land, buildings, laboratory space, and equipment as of August 31, 2019 and 2018, respectively:

(In thousands)

	2019	2018
Land	$ 92,130	$ 91,349
Buildings	761,899	757,976
Laboratory space and leasehold improvements	353,857	358,579
Equipment, furniture and fixtures	588,392	552,290
	1,796,278	1,760,194
Less: Accumulated depreciation and amortization	(1,125,849)	(1,093,879)
	670,429	666,315
Construction in progress	79,492	18,150
Total	$ 749,921	$ 684,465

Depreciation expense was approximately $77.9 million and $76.7 million for the fiscal years ended August 31, 2019 and 2018, respectively.

8. BOND AND NOTE PAYABLES

Tax-exempt bonds payable

On June 6, 2019, the Institute issued $51.8 million of tax-exempt capital appreciation bonds through the Economic Development Authority of Loudoun County, Virginia ("EDA") to finance the construction of an 101-unit apartment building at the Janelia Research Campus, which will be used by scientists and others engaged in research and administration at the Campus. The capital appreciation bonds represent bonds issued at a deep discount, pay no interest, but accrete or compound in value from the date of issuance to the date of maturity. The capital appreciation bonds are presented at their

maturity value less the unaccreted appreciation. Unaccreted appreciation represents the difference between the maturity value of the debt and the face value and is accreted as interest expense over the life of the bonds. The maturity value of $141.8 million less the unaccreted appreciation of $89.6 million was $52.2 million as of August 31, 2019. The bonds carry a fixed rate of 3.38%, a yield to maturity of 3.38%, and a maturity date of July 1, 2049.

On May 15, 2013, the Institute issued $33.1 million of tax-exempt bonds through the Industrial Development Authority of Loudoun County, Virginia ("IDA") to finance the construction of an 86-unit apartment building at the Janelia Research Campus, to be used by scientists and others engaged in research and administration at the Campus. The bonds carry a variable interest rate determined on a weekly basis and mature on June 1, 2043.

On October 2, 2009, the Institute issued $23.0 million of tax-exempt bonds through the IDA to finance the construction of a 60-unit apartment building at the Janelia Research Campus, to be used by scientists and others engaged in research and administration at the Campus. The bonds carry a variable interest rate determined on a weekly basis and mature on October 1, 2039.

On May 15, 2008, the Institute issued $76.5 million of bonds through the Maryland Economic Development Corporation ("MEDCO") to refund $76.5 million of outstanding bonds issued on November 8, 1990, to finance the construction of the Institute's headquarters and conference center complex. The bonds carry a variable interest rate determined on a weekly basis, and mature on May 15, 2043.

On February 21, 2008, the Institute issued $83.5 million in tax-exempt bonds through MEDCO to finance the expansion of the Institute's existing headquarters and conference facilities. The bonds carry a variable interest rate determined on a weekly basis and mature on February 15, 2043.

On February 27, 2003, the Institute issued $500.0 million in tax-exempt bonds through the IDA to finance construction of the Janelia Research Campus. The bonds carry a variable interest rate determined on a weekly basis and mature on February 15, 2038.

Prior to the maturity of each of these tax-exempt bond issues, the Institute is obligated upon seven-day notice from a holder to redeem any or all bonds unless the remarketing agent is able to place the bonds with another party or hold them in their own portfolio. To date, no remarketing agents have failed to fulfill their obligations under their respective remarketing agreements. The Institute maintains sufficient cash and marketable securities to pay any bondholder redemption of part or all of the $768.3 million outstanding as of August 31, 2019.

<u>Taxable bond payable</u>

On July 22, 2013, the Institute issued $1.2 billion of taxable fixed rate bonds to establish a program spending reserve. On December 20, 2018, the Institute redeemed its $1.2 billion 3.5% taxable bond due to mature on September 1, 2023 in full at a make-whole price of 102.9%. A loss on the early extinguishment of debt of $38.3 million was recognized during the year ended August 31, 2019 related to the redemption make-whole penalty of $34.6 million and the write-off of unamortized debt issuance costs and original issue discount of $3.7 million. Accrued interest at August 31, 2019 and 2018 was $0.0 million and $21.0 million, respectively, and is included in Accounts payable and accrued liabilities.

Note payable
In June 2003, the Institute entered into a renewable promissory note to finance the commercially-used land and buildings at the Janelia Research Campus that could not be financed with tax-exempt debt. Each year, the Institute has renewed the note. In May 2019, the Institute renewed the current note, which has a principal balance of $40.4 million, carries monthly interest payments based on the one-month LIBOR plus twenty-five (25) basis points, and matures May 21, 2020.

Interest Rate Swaps
All variable rate debt has been synthetically fixed using variable-to-fixed interest rate swaps. Refer to Note 5 for information related to the debt-related interest rate swaps.

Bond and note payables for the Institute as of August 31, 2019 are as follows:

August 31, 2019 (In thousands)	As of August 31, 2019		For the year ended August 31, 2019	
	Calendar Year of Maturity	Outstanding Principal	Average Interest Rate[3]	Interest Expense[4]
Tax-exempt bond payables:				
Janelia Research Campus Apartment C[1]	2049	$ 52,187	3.38%	$ 414
Janelia Research Campus Apartment B	2043	33,130	1.54%	508
Janelia Research Campus Apartment A	2039	23,000	1.59%	364
Headquarters and conference center	2043	76,500	1.59%	1,212
Headquarters and conference center expansion	2043	83,500	1.58%	1,320
Janelia Research Campus	2038	500,000	1.58%	7,888
Taxable bond payable:				
Program Spending Reserve[2]		-	3.50%	12,717
Total bonds payable		768,317		24,423
Amortization of bond discount/issuance costs				210
Unamortized bond discount/issuance costs		(1,062)		
Net bonds payable		767,255		24,633
Note payable:				
Janelia commercial property	2020	40,376	2.62%	1,096
Total note payable		40,376		1,096
Total		$ 807,631		$ 25,729

[1]The Institute issued $51.8 million of capital appreciation bonds in June 2019. The outstanding principal balance was $52.2 million due to the accretion in value from the date of issuance to August 31, 2019.

[2]The Institute redeemed the Program Spending Reserve bond in December 2018. The outstanding principal balance as of August 31, 2019 was $0.

[3]The variable interest rate is reset on a weekly basis except for the note payable which is reset monthly.

[4]Interest expense excludes net interest expense from the related interest rate swap.

Bond and note payables for the Institute as of August 31, 2018 are as follows:

August 31, 2018
(In thousands)

	As of August 31, 2018		For the year ended August 31, 2018	
	Calendar Year of Maturity	Outstanding Principal	Average Interest Rate[1]	Interest Expense[2]
Tax-exempt bond payables:				
Janelia Research Campus Apartment B	2043	$ 33,130	1.17%	$ 367
Janelia Research Campus Apartment A	2039	23,000	1.19%	261
Headquarters and conference center	2043	76,500	1.19%	866
Headquarters and conference center expansion	2043	83,500	1.20%	1,102
Janelia Research Campus	2038	500,000	1.20%	6,040
Taxable bond payable:				
Program Spending Reserve	2023	1,200,000	3.50%	42,000
Total bonds payable		1,916,130		50,636
Amortization of bond discount/issuance costs				780
Unamortized bond discount/issuance costs		(4,143)		
Net bonds payable		1,911,987		51,416
Note payable:				
Janelia commercial property	2019	40,376	1.83%	717
Total note payable		40,376		717
Total		$ 1,952,363		$ 52,133

[1]The variable interest rate is reset on a weekly basis except for the note payable which is reset monthly.

[2]Interest expense excludes net interest expense from the related interest rate swap.

The following table presents interest expense in total for the years ended August 31, 2019 and 2018.

(In thousands)

Interest expense	For the year ended August 31, 2019	For the year ended August 31, 2018
Bonds and note	$ 25,729	$ 52,133
Net interest rate swaps	8,656	12,428
Capital equipment leases	541	361
Other	2	-
Total	$ 34,928	$ 64,922

The following table presents the future annual principal payments required for the bond and note payables as of August 31, 2019:

(In thousands) Fiscal Year	Principal payments
2020	$ 40,376
2021	-
2022	-
2023	-
2024	-
Thereafter	768,317
Total	$ 808,693

The total interest paid in cash for the bonds and note payable, interest rate swaps, and capital equipment leases was approximately $55.9 million and $65.8 million for the years ended August 31, 2019 and 2018, respectively.

9. FUNCTIONAL EXPENSES

The financial statements report certain categories of expenses that are attributable to more than one program or supporting function and require allocation on a reasonable basis that is consistently applied. These expenses are allocated to the programs (Medical research and Science education and other scientific programs) or supporting activities (General and administrative) of the Institute and include employee benefits, post-retirement/employment, and certain shared services. The basis for allocation of these expenses are compensation and estimates of time and effort. The majority of the Institute's expenses, including depreciation and interest, directly relate to the program or supporting function to which they are charged, and therefore, not allocated. General and administrative expenses include those expenses that are not directly identifiable with any other specific function but provide for the overall support and direction of the Institute.

Expense	**Allocation basis**
Employee Benefits	Salaries and wages
Post-retirement/employment	Salaries and wages
Certain Shared Services	Pre-defined rate per attendee or other cost driver

For the year ended August 31, 2019, functional expenses are as follows:

August 31, 2019 (In thousands)	Program Services			Supporting Activities		
	Medical Research	Science Education and Other Scientific Programs	Programs Subtotal	General and Administrative	August 31, 2019 Total Expenses	August 31, 2018 Total Expenses
Salaries and wages	$ 246,311	$ 11,126	$ 257,437	$ 33,339	$ 290,776	$ 271,579
Benefits	58,897	4,099	62,996	8,427	71,423	71,064
Post-retirement/employment benefits	96,090	4,257	100,347	12,860	113,207	(56,272)
Grants	15,936	9,713	25,649	-	25,649	68,661
Supplies	79,239	980	80,219	1,085	81,304	73,406
Laboratory supplies	38,258	-	38,258	-	38,258	34,232
Professional services	33,898	6,951	40,849	11,271	52,120	54,560
Rent and occupancy	50,948	-	50,948	16	50,964	51,323
Property, equipment and maintenance	29,534	287	29,821	8,822	38,643	36,499
Facility maintenance and services	12,417	1	12,418	11,424	23,842	14,881
Utilities	4,415	-	4,415	1,246	5,661	5,697
Telecommunications	611	1	612	1,601	2,213	1,568
Travel and training	7,339	2,116	9,455	1,327	10,782	10,042
Television and film	-	5,255	5,255	-	5,255	5,641
Other	4,227	5,707	9,934	2,235	12,169	10,814
Depreciation	69,270	186	69,456	8,478	77,934	77,425
Interest	15,663	-	15,663	19,265	34,928	64,922
Deferred tax benefit, net	-	-	-	(12,895)	(12,895)	-
Total functional expenses	$ 763,053	$ 50,679	$ 813,732	$ 108,501	$ 922,233	$ 796,042

10. COMMITMENTS AND CONTINGENCIES

Occupancy Lease Obligations

The Institute occupies space that it uses for medical research at each of its host institutions under collaboration agreements that are considered operating leases for financial statement purposes. Under these arrangements, the Institute appoints biomedical researchers, referred to as investigators, at host institutions; employs these investigators and members of their laboratory teams; and provides investigators with laboratory budgets to cover research costs. The collaboration agreements generally require the Institute to pay occupancy charges for a reasonable amount of laboratory and office space occupied by Institute investigators, and to reimburse certain other research-related costs. The host institution provides laboratory and office space together with related maintenance and repairs, and is responsible for a range of functions including animal care, laboratory safety, hazardous materials purchasing, management and disposal, and management of intellectual property created by Institute scientists. The Institute typically has contractual rights to occupy host institution facilities for as long as Institute investigators are at that host institution. The Institute's obligation to pay a host institution occupancy charges is not fixed, and will vary depending on the number of investigators at a host institution and the space occupied by each of them, up to per-investigator limits set by the Institute.

Laboratory and other space charges, excluding amortization of leasehold improvements, totaled $51.0 million and $51.4 million for the years ended August 31, 2019 and 2018, respectively.

The following table presents the estimated minimum annual occupancy fees and other payments due under these agreements as of August 31, 2019:

(In thousands)

Fiscal Year	Occupancy Fees
2020	$ 49,897
2021	49,897
2022	49,897
2023	49,897
2024	49,897
Total	$ 249,485

Capital Equipment Lease Obligations

As of August 31, 2019 and 2018, the Institute had 27 and 26 capital leases totaling $26.0 million and $25.0 million, respectively, to cover scientific and information technology equipment. Total accumulated amortization related to the leased equipment is $12.8 million and $7.1 million, respectively. The Institute's unamortized capital lease obligation of $13.2 million and $17.9 million are included in *Land, buildings, laboratory space, and equipment, net* at August 31, 2019 and 2018, respectively. Amortization of assets under capital leases is included in *Medical Research* or *General and Administrative* expenses, depending upon the use of the asset. Interest paid on these obligations for the years ended August 31, 2019 and 2018 was $0.5 million and $0.3 million, respectively.

The following table presents the net minimum future lease payments under capital leases as of August 31, 2019:

(In thousands)

Fiscal Year	Capital Leases
2020	$ 7,661
2021	5,643
2022	359
Less amount representing interest	(442)
Present value of minimum lease payments	$ 13,221

Grant Commitments

The following table presents the timing of the Institute's grant payments and the associated discount as of August 31, 2019:

(In thousands)

Fiscal Year	Grant Payments
2020	$ 38,230
2021	39,206
2022	21,443
2023	8,170
2024	240
Discount	(3,642)
Net Liability	$ 103,647

Contractual Commitments

Contractual commitments pertaining to the construction of an apartment building at the Janelia Research Campus was approximately $57.3 million as of August 31, 2019. Proceeds from the issuance of bonds and other revenues are expected to provide the necessary funding for these commitments.

11. EMPLOYEE BENEFITS

Defined Contribution Retirement Plan

The Institute has a defined contribution plan under section 403(b) of the Internal Revenue Code. The Institute's plan contributions on behalf of its employees were $23.4 million and $20.9 million for the years ended August 31, 2019 and 2018, respectively.

Deferred Compensation Plan

The Institute has an unfunded deferred compensation plan in accordance with Section 457(b) of the Internal Revenue Code. The fair value of the assets and related liability to employees as of August 31, 2019 and 2018 was approximately $53.8 million and $49.9 million, respectively, and is reflected in the Consolidated Statements of Financial Position within *Other assets* and *Accounts payable and accrued liabilities*.

12. POSTRETIREMENT AND POSTEMPLOYMENT BENEFITS

The Institute maintains defined postretirement and postemployment benefit plans that provide eligible retirees with medical, prescription drug, vision, dental, life insurance, and disability programs. The total net obligation for these benefits reflected in the Consolidated Statements of Financial Position was $501.1 million and $370.3 million at August 31, 2019 and 2018, respectively.

Effective January 1, 2017, there were changes made to the postretirement benefit plan terms related to eligibility and retiree contribution requirements impacting both current and future retirees. The change in plan terms triggered a negative plan amendment and re-measurement as of September 30, 2016. The assumptions and methods used at the September 30, 2016, re-measurement date are the same as those used at August 31, 2017, except for the discount rate being updated to 3.80% for the Retiree Welfare Benefit Plan. The estimated prior service credit for the postretirement plan that will be amortized into expense over 6.5 years was approximately $102 million. The amortization

period represents the remaining years of service to the full eligibility date and was approximately $15.6 million and $15.6 million for the years ended August 31, 2019 and 2018, respectively.
The following table summarizes the postretirement plan's unfunded status and the amount of the accumulated postretirement benefit plan costs for the years ended August 31, 2019 and 2018:

(In thousands)		
Accrued Benefit Liability:	2019	2018
Accumulated postretirement benefit obligation, beginning of year	$ 367,655	$ 409,335
Service cost	13,588	17,056
Interest cost	15,297	15,618
Employee contributions	1,639	1,388
Plan amendments	-	-
Direct benefit payments	(7,351)	(6,967)
Net actuarial (gain) loss	108,822	(68,775)
Accumulated benefit obligation, end of year	$ 499,650	$ 367,655
Change in fair value of plan assets:		
Fair value of plan assets, beginning of year	$ -	$ -
Actual return on plan assets	7	-
Employer contributions to plan	1,000	-
Employer direct benefit payments	5,712	5,579
Employee contributions	1,639	1,388
Direct benefit payments	(7,351)	(6,967)
Fair value of plan assets, end of year	$ 1,007	$ -
Reconciliation of funded status:		
Funded status	$ (498,643)	$ (367,655)
Current liabilities	(6,872)	(6,886)
Noncurrent liabilities	(491,771)	(360,769)
Accumulated postretirement benefit liability included in the Consolidated Statements of Financial Position	$ (498,643)	$ (367,655)

Changes in plan assets and benefit obligations recognized in net assets:		
New prior service cost	$ -	$ -
Net (gain) loss arising during the year	108,815	(68,775)
Amortization recognition of prior service credit	15,566	15,566
Amortization recognition of net gain (loss)	(108,815)	68,775
Total recognized in net assets	$ 15,566	$ 15,566
Estimated amount that will be amortized from accumulated net assets over the next fiscal year:		
Prior service credit	$ 15,566	$ 15,566
Total estimated amount to be amortized from other plan changes over the next fiscal year	$ 15,566	$ 15,566
Components of net periodic benefit cost:		
Service cost	$ 13,588	$ 17,056
Interest cost	15,297	15,618
Amortization of prior service cost	(15,566)	(15,566)
Immediate recognition of net actuarial (gain) loss	108,815	(68,775)
Net periodic benefit cost	$ 122,134	$ (51,667)
Amounts recorded in net assets not yet amortized as components of net periodic benefit cost:		
Prior service cost	$ (56,243)	$ (71,809)
Amount recognized as an increase in net assets	$ (56,243)	$ (71,809)

The discount rate assumed in determining the actuarial present value of accumulated postretirement benefit obligations was 3.10% and 4.20% as of August 31, 2019 and 2018, respectively.

The average health care cost trend rate assumptions used to determine the accumulated postretirement benefit obligations as of August 31, 2019 and 2018 are summarized in the following table.

	August 31,2019 Medical		August 31,2018 Medical	
	Pre-65	Post-65	Pre-65	Post-65
Weighted-average assumptions to determine benefit obligations:				
Health care cost trend rate				
Immediate trend rate	5.93%	5.00%	6.12%	5.00%
Ultimate trend rate	4.50%	4.50%	4.50%	4.50%
Year of ultimate trend rate	2039	2039	2039	2039

As an indicator of sensitivity, a 1% increase in the assumed health care cost trend rate would increase the total service cost and interest cost components by $9.9 million for the fiscal year ended August 31, 2019 and increase the accumulated postretirement benefit obligation by $173.9 million as of August 31, 2019. A 1% decrease in the assumed health care cost trend rate would decrease the total service cost and interest cost components by $6.0 million for the fiscal year ended August 31, 2019 and decrease the accumulated postretirement benefit obligation by $98.6 million as of August 31, 2019.

Health coverage is provided to employees who qualify for the Institute's long-term disability benefit until the age of 65. This postemployment benefit cost was $0.3 million and $0.2 million for the years ended August 31, 2019 and 2018, respectively.

The postretirement benefit contributions equate to the benefit claims paid out under the plan. The postretirement benefits that are expected to be paid in each of the next five fiscal years, which reflects expected future service, and in the aggregate for the five fiscal years thereafter, are as follows:

(In thousands)

Fiscal Year	Expected Benefit Payments
2020	$ 7,879
2021	8,995
2022	10,101
2023	11,410
2024	12,833
2025 - 2029	87,242

On April 25, 2019, HHMI established a separate Voluntary Employee Beneficiary Association ("VEBA") Trust, the Howard Hughes Medical Institute Retiree Welfare Benefit Plan Trust (the "Trust"). The Trust is exclusively used to fund health benefits of certain of its retired employees and their spouses and dependents who are eligible for coverage. The Trust will be invested in a manner to meet the short-term liquidity demands relating to these obligations. The investment objectives are to preserve the principal of the Trust while obtaining a total rate of return commensurate with the level of assumed risk and liquidity requirements. Investments are limited to U.S. fixed income securities or funds of the same. The Institute's long-term strategic asset allocation guidelines given the Trust's long-term objectives and short-term constraints are summarized in the following table.

Asset Category	Policy Target	Target Range
Money Market / Liquidity Funds	10%	0% - 20%
Domestic Fixed Income Funds	90%	0% - 100%

The Institute's contribution on behalf of its employees was $1.0 million for the year ended August 31, 2019. The following table summarizes the fair value of the Institute's contribution as of August 31, 2019.

(In thousands)

Asset Category	Percentage of Contribution	Quoted Market Prices (Level 1)	Total Fair Value
Money Market / Liquidity Funds	0%	$ -	$ -
Domestic Fixed Income Funds	0%	-	-
Cash and cash equivalents	100%	1,007	1,007
Total		$ 1,007	$ 1,007

13. INCOME TAXES

The provision for income taxes consists of the following for the year ended August 31, 2019:

(In thousands)		2019
Deferred federal	$	11,031
Deferred state		1,864
Benefit from income taxes	$	12,895

Deferred income taxes, net consists of the following as of August 31, 2019 and 2018, respectively:

(In thousands)		2019		2018
Total net operating loss carryforward	$	112,939	$	99,874
Less: Valuation allowance		(100,044)		(99,874)
Deferred income taxes	$	12,895	$	-

Under the provisions of the Act, net operating loss carryforwards generated prior to the 2018 tax year may be applied toward future taxable unrelated business income generated from any unrelated business activity and will continue to expire over a period of twenty years. As of August 31, 2019, the Institute estimated federal and state net operating loss carryforwards generated prior to the 2018 tax year of approximately $591 million, which will expire at various dates from 2027 through 2038. These net loss carryforwards result in a deferred tax asset of $100 million. Management determined that it is more likely than not that the benefits of some of the net operating loss carryforwards will not be realized in the future; accordingly, the Institute provided a partial valuation allowance of $88 million related to these net operating loss carryforwards.

Net operating loss carryforwards generated in the 2018 tax year and future tax years may only be applied toward future taxable unrelated business income generated from the same business activity, are limited to 80% of the taxable unrelated business income generated in a single tax year, and no longer expire. As of August 31, 2019, the Institute had federal and state net operating loss carryforwards generated in the 2018 tax year totaling $87 million related to three unrelated business activities resulting in a deferred tax asset of $13 million. Management determined that it is more likely than not that the benefits of some of the net operating loss carryforwards will not be realized in the future; accordingly, the Institute partially reversed its allowance of $13 million related to these net operating loss carryforwards.

The Institute did not recognize a provision for income taxes for the year ended August 31, 2018. As of August 31, 2018, the Institute had federal and state net operating loss carryforwards totaling approximately $591 million resulting in a calculated deferred tax asset of $100 million. Management believed that it was more likely than not that the benefit of these net operating loss carryforwards would not be realized in the future; accordingly, the Institute provided a full valuation allowance of $100 million against this calculated tax asset.

Net tax refunds due or received on income totaled approximately $0.1 million and $0.4 million for the years ended August 31, 2019 and 2018, respectively. Taxes paid on income totaled approximately $0.9 million and $0.3 million for the years ended August 31, 2019 and 2018, respectively.

14. MEDICAL RESEARCH ORGANIZATION

The Institute is classified as a medical research organization for federal income tax purposes under Section 170(b)(1)(A)(iii) of the Internal Revenue Code of 1986, as amended (the "Code"). The Institute is not a private foundation under Chapter 42 of the Code.

15. SUBSEQUENT EVENTS

Management has performed an evaluation of subsequent events through November 22, 2019, which is the date that the financial statements were issued, noting no events which materially affect the financial statements as of August 31, 2019.