California Institute of Technology

Financial Statements
For the Years Ended September 30, 2017 and 2016

California Institute of Technology Index to the Financial Statements For the Years Ended September 30, 2017 and 2016

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Report of Independent Auditors

To the Board of Trustees of the California Institute of Technology

We have audited the accompanying financial statements of the California Institute of Technology, which comprise the balance sheets as of September 30, 2017 and 2016, and the related statements of activities and of cash flows for the years then ended.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of the 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 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 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 financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on our judgment, including the assessment of the risks of material misstatement of the 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 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 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 financial statements referred to above present fairly, in all material respects, the financial position of the California Institute of Technology as of September 30, 2017 and 2016, and the changes in its net assets and its cash flows for the years then ended in accordance with accounting principles generally accepted in the United States of America.

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January 24, 2018

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A CONTINUE	2017	2016
ASSETS		
Cash and cash equivalents (Notes B and D)	\$ 6,60	3 \$ 6,374
Accounts and notes receivable, net		
United States government	299,63	4 231,915
Other	15,85	6 61,424
Contributions receivable, net	254,24	· ·
Investments	3,398,06	· ·
Prepaid expenses and other assets	182,47	5 175,629
Deferred United States government billings	347,52	1 371,378
Property, plant, and equipment, net	912,60	4 862,460
Total assets	\$ 5,417,00	1 \$ 4,949,956
LIABILITIES and NET ASSETS		
Liabilities:		
Accounts payable and accrued expenses	\$ 378,46	9 \$ 318,916
Accrued compensation and benefits	228,48	6 209,465
Deferred revenue and refundable advances	34,47	,
Annuities, trust agreements, and agency funds	92,03	· ·
Bonds and notes payable, net	1,248,89	
Accumulated postretirement benefit obligation	394,13	0 415,710
Total liabilities	2,376,49	2 2,322,312
Net assets:		
Unrestricted	555,79	6 424,153
Temporarily restricted	857,55	,
Permanently restricted	1,627,15	·
Total net assets	3,040,50	9 2,627,644
Total liabilities and net assets	\$ 5,417,00	1 \$ 4,949,956

California Institute of Technology Statement of Activities For the Year Ended September 30, 2017 (with summarized financial information for the year ended September 30, 2016) (Dollars in Thousands)

	Unre	stricted	nporarily stricted		manently stricted		2017 Total		2016 Fotal
Operating revenues:									
Tuition and fees, net of student financial aid	\$	41,342	\$ -	\$	-	\$	41,342	\$	40,814
Endowment spending, distributed		46,562	82,782		-		129,344		120,359
Gifts and pledges		27,190	11,516		-		38,706		149,257
Grants and contracts:									
Jet Propulsion Laboratory - direct	2,	284,060	-		-	2	2,284,060	1.	,870,621
United States government, Campus - direct		179,691	-		-		179,691		166,131
Other Campus - direct		31,026	-		-		31,026		27,718
Recovery of indirect costs and allowances		125,083	-		-		125,083		121,198
Auxiliary enterprises		30,109	-		-		30,109		28,933
Other		35,199	-		-		35,199		36,621
Net assets released from restrictions		148,310	 (148,310)						
Total operating revenues	2,	948,572	(54,012)		-	2	2,894,560	2	,561,652
Operating expenses:									
Compensation and benefits		373,418	-		_		373,418		368,352
Supplies and services		124,837	-		_		124,837		120,033
Subcontracts		30,474	-		-		30,474		31,647
Graduate fellowships		19,652	-		_		19,652		19,037
Depreciation, accretion, and amortization		67,167	-		_		67,167		65,913
Utilities		14,931	-		_		14,931		16,992
Interest		23,291	-		_		23,291		20,742
Jet Propulsion Laboratory	2,	284,060	 			2	2,284,060	1	,870,621
Total operating expenses	2,	937,830	 			2	2,937,830	2	,513,337
Results of operations		10,742	 (54,012)				(43,270)		48,315
Non-operating changes:									
Investment return in excess of endowment spending		126,250	126,933		7,031		260,214		71,177
Endowment spending, undistributed		1,234	9,897		783		11,914		10,363
Net assets released from restrictions		135	(135)		-		-		-
Gifts and pledges		13,227	10,421		188,227		211,875		143,605
Changes in fair value of interest rate swap		20,116	-		-		20,116		(15,112)
Non periodic changes in benefit obligations		(6,972)	_		_		(6,972)		(19,859)
Interest expense		(23,609)	_		_		(23,609)		(23,214)
Loss on retirement of debt		-	_		_		-		(10,158)
Redesignations, reclassifications and other		(9,480)	 (1,936)		(5,987)		(17,403)		(2,087)
Total non-operating activities		120,901	 145,180		190,054		456,135		154,715
Increase in net assets		131,643	91,168		190,054		412,865		203,030
Net assets at beginning of year		424,153	 766,388		1,437,103	2	2,627,644	2	,424,614
Net assets at end of year	\$	555,796	\$ 857,556	\$.	1,627,157	\$ 3	3,040,509	\$ 2	,627,644

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

California Institute of Technology Statement of Activities For the Year Ended September 30, 2016 (Dollars in Thousands)

	Unrestricted	Temporarily Restricted	Permanently Restricted	2016 Total
Operating revenues:				
Tuition and fees, net of student financial aid	\$ 40,814	\$ -	\$ -	\$ 40,814
Endowment spending, distributed	54,597	65,762	-	120,359
Gifts and pledges	48,235	101,022	-	149,257
Grants and contracts:				
Jet Propulsion Laboratory - direct	1,870,621	-	-	1,870,621
United States government, Campus - direct	166,131	-	-	166,131
Other Campus - direct	27,718	-	-	27,718
Recovery of indirect costs and allowances	121,198	-	-	121,198
Auxiliary enterprises	28,933	-	-	28,933
Other	36,621	-	-	36,621
Net assets released from restrictions	114,105	(114,105)		
Total operating revenues	2,508,973	52,679	-	2,561,652
Operating expenses:				
Compensation and benefits	368,352	-	-	368,352
Supplies and services	120,033	-	-	120,033
Subcontracts	31,647	-	-	31,647
Graduate fellowships	19,037	-	-	19,037
Depreciation, accretion, and amortization	65,913	-	-	65,913
Utilities	16,992	-	-	16,992
Interest	20,742	-	-	20,742
Jet Propulsion Laboratory	1,870,621			1,870,621
Total operating expenses	2,513,337			2,513,337
Results of operations	(4,364)	52,679		48,315
Non-operating changes:				
Investment return in excess of endowment spending	45,513	25,092	572	71,177
Endowment spending, undistributed	2,737	6,974	652	10,363
Net assets released from restrictions	2,995	(2,995)	-	-
Gifts and pledges	1,606	5,830	136,169	143,605
Changes in fair value of interest rate swap	(15,112)	-	-	(15,112)
Non periodic changes in benefit obligations	(19,859)	-	-	(19,859)
Interest expense	(23,214)	-	-	(23,214)
Loss on retirement of debt	(10,158)	-	-	(10,158)
Redesignations, reclassifications and other	(63,199)	(9,263)	70,375	(2,087)
Total non-operating activities	(78,691)	25,638	207,768	154,715
Increase in net assets	(83,055)	78,317	207,768	203,030
Net assets at beginning of year	507,208	688,071	1,229,335	2,424,614
Net assets at end of year	\$ 424,153	\$ 766,388	\$ 1,437,103	\$ 2,627,644
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The accompanying notes are an integral part of these financial statements.

California Institute of Technology Statements of Cash Flows For the Years Ended September 30, 2017 and 2016 (Dollars in Thousands)

	2017		2016
Cash flows from operating activities:			
Increase in net assets	\$ 412,865	\$	203,030
Adjustments to reconcile change in net assets to			
net cash used in operating activities:			
Depreciation, accretion, and amortization	67,167		65,913
Changes in postemployment benefit obligations	6,972		19,859
Contributions restricted for long-term investment and capital projects	(182,984)		(136,682)
Realized and unrealized (gains)/losses on investments and swap	(369,135)		(147,066)
Other non-cash items	(5,342)		2,123
Changes in assets and liabilities:			
Accounts and notes receivable, net	(68,007)		(12,843)
Contributions receivable, net	10,570		(65,578)
Prepaid expenses and other assets	(18,901)		(6,244)
Deferred United States government billings	23,857		(21,438)
Accounts payable and accrued expenses	62,913		10,102
Accrued compensation and benefits	19,021		18,529
Deferred revenue, refundable advances, and agency funds	2,807		(15,427)
Accumulated postretirement benefit obligation	(28,552)		16,099
		-	
Net cash used in operating activities	(66,749)		(69,623)
Cash flows from investing activities:			
Purchases of investments	(739,186)		(831,184)
Proceeds from sales and maturities of investments	781,345		795,977
Purchases of property, plant, and equipment	(105,721)		(61,622)
Proceeds from sale of property, plant, and equipment	 3,175		1,798
Net cash used in investing activities	(60,387)		(95,031)
Cash flows from financing activities:			
Contributions restricted for long-term investment and capital projects	133,389		91,145
Investment return restricted for long-term investment and capital projects	914		996
Cash received under annuity and trust agreements	6,258		5,474
Cash payments made under annuity and trust agreements	(6,396)		(7,232)
Net (repayments)/borrowings of short-term debt	(6,800)		17,170
Bond issuance costs	-		(1,849)
Proceeds from issuance of long-term debt	-		150,000
Cash paid for retirement of long-term debt			(89,933)
Net cash provided by financing activities	127,365		165,771
Net increase in cash and cash equivalents	229		1,117
Cash and cash equivalents at beginning of year	6,374		5,257
Cash and cash equivalents at end of year	\$ 6,603	\$	6,374

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

A. Description of California Institute of Technology

California Institute of Technology (the "Institute") is a private, not-for-profit institution of higher education based in Pasadena, California. Founded in 1891, the Institute provides education and training services, primarily for students at the undergraduate, graduate, and postdoctoral levels, and performs research, training, and other services under grants, contracts, and similar agreements with sponsoring organizations, primarily departments and agencies of the government of the United States of America.

B. Summary of Significant Accounting Policies

Basis of Presentation

The accompanying financial statements include the accounts of the Institute's main campus and satellite facilities ("Campus"), as well as the Jet Propulsion Laboratory ("JPL"), a Federally Funded Research and Development Center managed by the Institute for the National Aeronautics and Space Administration ("NASA").

The Institute manages JPL under a cost-reimbursable contract with NASA. JPL's land, buildings, and equipment are owned by the United States government and are excluded from the Institute's financial statements. Receivables and liabilities arising from JPL's activities are reflected in the Institute's balance sheets. The direct costs of JPL's activities and the related reimbursement of those costs are reflected separately in the statements of activities. The management allowances earned under the NASA contract were \$21,000 for each of the years ended September 30, 2017 and 2016 and are included in recovery of indirect costs and allowances in the statements of activities.

The Institute's financial statements have been prepared on the accrual basis of accounting, in accordance with accounting principles generally accepted in the United States of America.

Net Assets

Net assets are classified into three categories according to donor-imposed restrictions or certain provisions of law or accounting standards: permanently restricted, temporarily restricted, and unrestricted.

- Permanently restricted net assets include endowment gifts as well as certain charitable remainder trusts, pooled income funds, gift annuities, other split-interest agreements, and contributions receivable in which donors have stipulated that the original value of their contributions and, if applicable, any subsequent accumulations, be held in perpetuity.
- Temporarily restricted net assets include investment return from permanent endowments that has not been appropriated for expenditures and gifts and related contributions receivable for which donor-imposed restrictions have not been met, including funds restricted for future capital projects, certain charitable remainder trusts, pooled income funds, gift annuities, and other split-interest agreements. These restrictions are expected to be removed through the passage of time, the appropriation of endowment earnings by the Institute, and/or the Institute's incurrence of expenditures or other payments that meet donors' restrictions. Expirations of temporary restrictions on net assets are reported as releases from temporarily restricted to unrestricted net assets in the statements of activities. Donor-restricted gifts that

are received and either spent or deemed spent within the same fiscal year are reported as unrestricted revenues.

• Unrestricted net assets are those not subject to donor-imposed restrictions or requirements for classification imposed by law or accounting standards.

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Reclassifications

Certain prior year amounts at September 30, 2016 have been reclassified to conform to the current year presentation.

Redesignations

Net assets related to certain contributions received in prior periods have been transferred among net asset categories due to changes in donor designations. Such redesignations during the years ended September 30, 2017 and 2016, respectively, include \$0 and \$69,093 transferred from unrestricted net assets to permanently restricted net assets due to endowment funding agreements with donors.

Cash and Cash Equivalents

Cash and cash equivalents include bank account balances, investments in money market funds, and direct short-term investments that have remaining maturities of three months or less when purchased. Bank account balances at September 30, 2017 and 2016 were \$6,603 and \$6,374, respectively. The Institute classifies all cash and cash equivalents held as part of the investment portfolios as short-term investments. At September 30, 2017 and 2016, short-term investments, as disclosed in Note D, included \$273,654 and \$146,080, respectively, in cash and cash equivalents. Carrying amounts of cash and cash equivalents approximate fair value due to the relatively short maturities of these instruments.

Under the Institute's cash management system, checks issued by the Institute but not yet cashed by recipients may result in overdraft balances for accounting purposes and are included in accounts payable and accrued expenses in the balance sheets if an overdraft situation exists. There were no overdrafts at September 30, 2017 and 2016.

Accounts and Notes Receivable

Accounts receivable under contracts and grants are carried at cost, less an immaterial allowance for doubtful accounts. Net accounts receivable under contracts and grants totaled \$306,191 and \$237,643 at September 30, 2017 and 2016, respectively. Activity in the allowance accounts was not significant during the years ended September 30, 2017 and 2016. The carrying value of net accounts receivable approximates fair value.

Accounts receivable from students and employees of \$1,499 and \$2,136 at September 30, 2017 and 2016, respectively, are carried at cost and approximate fair value. Doubtful accounts are charged to

California Institute of Technology Notes to Financial Statements September 30, 2017 and 2016 (Dollars in Thousands)

expense when they are deemed to become uncollectible. During the years ended September 30, 2017 and 2016, only minor amounts were written off as uncollectible.

The Institute provides loans to students from both internal funds and from funds provided by the United States government under the Federal Perkins Loan Program. Substantially all student loans that bear interest carry fixed rates, and substantially all student loans carry ten-year terms. Student loans receivable of \$6,011 and \$6,322 at September 30, 2017 and 2016, respectively, are carried at cost.

The Institute holds all loans to maturity. Loans to students are considered delinquent 10-90 days after a borrower misses a required payment. Delinquent interest-bearing loans continue to accrue interest. At September 30, 2017 and 2016, there were no significant delinquencies on outstanding loans. No allowances have been recorded, and only minor amounts of loans are expected to become uncollectible. The principal credit quality indicator for such loans is collection experience. The Institute manages its credit risk by limiting amounts loaned per term, monitoring aggregate loan levels, and maintaining an active collections process with the assistance of third-party collection agencies as necessary. Student loans generally are not dischargeable in bankruptcy. Loans are not considered uncollectible until all reasonable collection efforts have been made.

Investments

Investments are carried at fair value as discussed in Note K. Purchases and sales of securities are recorded on trade dates, and realized gains and losses are determined based on the average cost of securities sold. Accounts receivable included \$348 and \$46,205 related to outstanding sales and accounts payable included \$3,211 and \$1,512 related to outstanding purchases of investments at September 30, 2017 and 2016, respectively.

Short-term investments included \$33,899 and \$51,811 held by the counterparty to the Institute's interest rate swap at September 30, 2017 and 2016, respectively, as collateral in accordance with the terms of the swap agreement.

Derivatives

The Institute uses an interest rate swap to manage the interest rate exposure of a portion of its variable rate debt. The swap is recorded at fair value, which is the estimated amount that the Institute would receive or pay to terminate the agreement, taking into account current interest rates and the current credit-worthiness of the swap counterparty. Costs of regular settlements with the counterparty of \$4,819 and \$5,399 during the years ended September 30, 2017 and 2016, respectively, are included in interest expense in the statements of activities. Changes in the swap's fair value during the years ended September 30, 2017 and 2016, resulted in unrealized gains of \$20,116 and unrealized losses of \$15,112, respectively, which are included in non-operating changes in net assets in the statements of activities. The fair value of the swap was a liability of \$50,405 and \$70,521 at September 30, 2017 and 2016, respectively, and is included in accounts payable and accrued expenses in the balance sheets.

The Institute also directly transacts in options to manage equity risks of certain investments. The fair value of options is included in investments in the balance sheets and is classified as derivatives in disclosures of investments. Changes in the fair value of options are reported in investment return (loss). The Institute does not designate any derivative instruments as hedging instruments under

Generally Accepted Accounting Principles. Further disclosure of the fair value of derivatives is reported in Note K.

Property, Plant, and Equipment

Property, plant, and equipment is recorded at the cost of construction, acquisition, or the fair value of contributed assets at the date of gift. Interest costs related to debt used for construction of assets are capitalized and included in the cost of construction. Depreciation on all assets subject to depreciation is calculated over the estimated useful lives as defined for each class of depreciable asset, which range from three to fifty years, using the straight-line method. Depreciation on buildings and building improvements is calculated based on the useful lives of each major building component. The Institute provides for the renewal and replacement of assets from various sources set aside for this purpose.

The Institute routinely acquires or constructs equipment under federally and non-federally funded research awards. The costs of such assets for which title does not ultimately transfer to the Institute are charged to expense.

The Institute's conditional asset retirement obligations are primarily related to removal and disposal of asbestos and removal of buildings and improvements from leased property. Asset retirement cost, net of accumulated depreciation, at September 30, 2017 and 2016 was \$12,398 and \$349, respectively, and is included in property, plant, and equipment in the balance sheets. Conditional asset retirement obligations at September 30, 2017 and 2016 were \$26,076 and \$13,683, respectively, and are included in accounts payable and accrued expenses in the balance sheets.

Annuity and Trust Agreements

The Institute's split-interest agreements with donors consist primarily of charitable gift annuities and charitable remainder trusts for which the Institute serves as trustee. For irrevocable agreements, assets contributed are included in investments at fair value. Contribution revenue is recognized at the date each trust is established after recording liabilities for the actuarially-determined present value of the estimated future payments to be made to beneficiaries. Actuarial liabilities are discounted at an appropriate credit risk-adjusted rate determined at the inception of each agreement. Discount rates on split-interest agreements range from 1.20% to 11.20% per annum. The liabilities are adjusted during the terms of the agreements for changes in the fair value of the assets, accretion of discounts, and other changes in the estimates of future benefits. The 2012 Individual Annuity Reserving (IAR) table was used for the years ended September 30, 2017 and 2016. Split-interest agreement liabilities totaled \$69,117 and \$68,537 at September 30, 2017 and 2016, respectively, and are included in liabilities for annuities, trust agreements and agency funds in the balance sheets and classified in Level 3 of the valuation hierarchy described in Note K.

The Institute is also the trustee for certain revocable agreements. Assets contributed are included in Institute investments at fair value, and amounts equal to the value of assets are included in liabilities for annuities, trust agreements, and agency funds in the balance sheets. Total assets and liabilities for revocable agreements were \$8,450 and \$8,045 at September 30, 2017 and 2016, respectively.

Beneficial Interests

The Institute is the beneficiary of both charitable remainder and perpetual trusts held and administered by others and interests in certain estates bequeathed by donors. The fair value of the Institute's interests in charitable and perpetual trusts is estimated by multiplying the Institute's

percentage interest by the fair value of trust assets at the time that receipt of such interests is both probable and reasonably estimable. The value of the Institute's interests in such trusts is adjusted for changes in the fair values of the underlying assets. Distributions from perpetual trusts are recorded as revenue when contributed by the trustee. Interests in estates are recognized based on estimates of cash flows from estate settlements at the time such cash flows are probable and reasonably estimable. Beneficial interests totaled \$48,038 and \$73,341 at September 30, 2017 and 2016, respectively, and are included in prepaid expenses and other assets in the balance sheets.

Retirement Plans

The Institute provides a defined contribution retirement program for eligible academic and administrative employees. Contributions to Internal Revenue Code "IRC" Section 403(b) defined contribution plans for the years ended September 30, 2017 and 2016 were \$25,637 and \$24,614, respectively, for the Campus and \$84,911 and \$75,918, respectively, for JPL. The Institute has no assets or liabilities related to these plans.

At September 30, 2017 and 2016, respectively, prepaid expenses and other assets included \$86,885 and \$77,462 in assets held pursuant to IRC section 457 defined contribution retirement plans. These assets are invested with external investment managers and are stated at fair value. The Institute's liabilities related to these funds were \$86,368 and \$77,277 at September 30, 2017 and 2016, respectively, and are included in accrued compensation and benefits in the balance sheets.

Funds Held for Others

The Institute held assets totaling \$14,468 and \$13,179 in agency funds at September 30, 2017 and 2016, respectively. The assets held are primarily included in investments in the balance sheets. The corresponding liability, which is equal to assets held, is included in annuities, trust agreements, and agency funds in the balance sheets.

Compensated Absences

Institute employees are entitled to paid vacation based upon length of service and other factors. Certain employees also accrue benefits related to sick leave. The Institute records a liability for these benefits that employees have earned but not yet taken. At September 30, 2017 and 2016, accrued compensated absences of \$88,984 and \$83,219, respectively, are included in accrued compensation and benefits in the balance sheets. Other compensated absences do not accumulate and are treated as current-period costs.

Workers' Compensation Insurance

The Institute provides workers' compensation insurance to its employees. Liabilities for the Institute's retained risk related to such coverage are determined by an actuary and are included in accrued compensation and benefits in the balance sheets. At September 30, 2017 and 2016, the liabilities for workers' compensation were \$10,064 and \$9,657, respectively.

Revenue Recognition

The Institute's revenue recognition policies are as follows:

• Tuition and fees - Student tuition and fees are recorded as revenues during the year the related academic services are rendered and are displayed net of financial aid on the statements of activities. Tuition and fees totaled \$103,963 and \$98,835 for the years ended September 30,

2017 and 2016, respectively. Student financial aid totaled \$62,621 and \$58,021 for the years ended September 30, 2017 and 2016, respectively. Student tuition and fees received in advance of services to be rendered, net of applicable financial aid, are recorded as deferred revenue.

- *Investment return (loss)* Investment transactions are recorded on the trade date. Investment income and realized and unrealized gains and losses, net of investment management fees, are reported as increases or decreases to the appropriate net asset category.
- *Gifts* Unconditional promises to give are recorded as revenues in the year received. Noncash gifts are recorded at fair value using quoted market prices, market prices for similar assets, independent appraisals, or as estimated by Institute management. Gift revenue from contributions to be collected in the form of securities or other investments is adjusted at each year end to reflect the year-end value of securities and/or investments to be contributed.

Donor-restricted gifts, which are received and either spent, or deemed spent, within the same year are reported as unrestricted revenue. Gifts of long-lived assets with no donor-imposed time restrictions are reported as unrestricted revenue in the year received. Gifts restricted to the acquisition or construction of long-lived assets are reported as temporarily restricted revenue and released to unrestricted net assets when such assets are placed in service. Gifts that are subject to time or other purpose restrictions are reported as temporarily restricted revenue and released to unrestricted net assets when such restrictions are met. Gifts received for endowment investment are held in perpetuity and recorded as permanently restricted revenue.

Conditional promises to give are not recorded until donor-imposed conditions have been substantially met. Conditional promises to give totaled \$65,588 and \$69,214 at September 30, 2017 and 2016, respectively. Payments received related to conditional promises totaled \$5,609 and \$2,538 at September 30, 2017 and 2016, respectively, and are included in deferred revenue and refundable advances in the balance sheets.

- Grants and contracts Revenues from grants and contracts generally are recognized in unrestricted net assets as allowable expenditures are incurred under such agreements. Substantially all United States government grants and contracts awarded to the Campus provide for the reimbursement of indirect facilities and administrative costs based on rates negotiated with the Office of Naval Research, the Campus' federal cognizant agency for the negotiation and approval of facilities and administrative and other indirect cost rates. Costs related to the performance of activities under the JPL contract are reimbursable by NASA. Amounts received in excess of expenditures are recorded as deferred revenue. At September 30, 2017 and 2016, deferred revenue related to grants and contracts was \$11,207 and \$10,908, respectively.
- Auxiliary enterprises Revenues from supporting services, such as dining facilities, faculty
 and student housing, and retail stores are recorded at the time of delivery of products or
 services. Amounts received in advance of deliveries of products or services are recorded as
 deferred revenue.

Expenses

Expenses are generally reported as decreases in unrestricted net assets. Campus expenses are reported in the statements of activities by natural classification. Campus expenses by functional classification were as follows for the years ended September 30, 2017 and 2016:

	2017	2016	
Instruction and academic support	\$ 290,222	\$ 289,421	
Organized research	250,007	237,005	
Institutional	77,155	82,168	
Auxiliary enterprises	36,386	34,122	
Total Campus functional expenses	\$ 653,770	\$ 642,716	

Building and improvements depreciation and plant operation expenses are allocated to functional classifications based on square footage occupancy of Institute facilities. Equipment depreciation is allocated to functional classifications based on average equipment purchases attributed to each classification. Interest expense on external debt, net of amounts capitalized, is allocated to the functional categories that have benefited from the proceeds of such debt.

Operating and Non-operating Activities

The statements of activities report the changes in net assets from the Institute's operating and non-operating activities. Operating activities exclude investment returns/losses in excess/deficit of endowment spending, endowment spending available but not distributed to operations, revenues and releases from restrictions related to gifts for construction, endowments, and annuity and trust agreements, changes in postemployment benefit obligations that are not otherwise recognized in net periodic benefit cost, changes in fair value of interest rate swaps, interest expense related to any bonds issued for which the proceeds have not yet been used for capital projects, to refund other bonds or for operating purposes, gains or losses on disposal of plant, property and equipment, net gains or losses on nonrecurring transactions, actuarial adjustments related to annuity and trust agreements, losses on retirement of indebtedness, and donor redesignations or other reclassifications of net assets.

Tax Status

The Institute is generally exempt from federal taxes on income related to its charitable purpose under the provisions of IRC Section 501(c)(3) and from California and other state income taxes under corresponding state laws. The Institute is subject to both federal and state income taxes on income from certain activities not substantially related to its exempt purpose. At September 30, 2017 and 2016, the Institute maintained a full valuation allowance on its deferred tax assets, which are primarily due to tax losses from certain investment activities. Due to uncertainties surrounding both the timing and amounts of potential future net taxable income, the Institute has concluded that it is more likely than not that the Institute will not realize the deferred tax assets. The Institute has not provided for any uncertain tax positions at September 30, 2017 and 2016.

Related Party Transactions

Members of the Institute's Board of Trustees and senior management may, from time to time, be associated, either directly or indirectly, with entities doing business with the Institute. These

California Institute of Technology Notes to Financial Statements September 30, 2017 and 2016 (Dollars in Thousands)

transactions are conducted in the normal course of business at an arm's length, and in accordance with the Institute's policies and procedures governing potential conflicts of interest.

Accounting Pronouncements Adopted

In September 2017, the Institute adopted Accounting Standards Update ("ASU") 2015-05, issued by the Financial Accounting Standards Board ("FASB"). ASU 2015-05 clarifies how customers in cloud computing arrangements should divide the costs of such arrangements between capital and expense. There was no material impact to the financial statements as a result of adoption.

In September 2017, the Institute adopted ASU 2014-15, which governs an entity's consideration and disclosure of uncertainties about its ability to continue as a going concern. There was no material impact to the financial statements as a result of adoption.

New Accounting Pronouncements

In May 2014, FASB issued ASU 2014-09 regarding the recognition of revenue from contracts with customers. ASU 2014-09 outlines a single comprehensive standard for revenue recognition across all industries and supersedes most existing revenue recognition guidance. In addition, ASU 2014-09 requires new and enhanced disclosures regarding revenue recognition. ASU 2014-09 is effective for the Institute's fiscal year ending September 30, 2019. The Institute is evaluating the impact this standard will have on its financial statements and disclosures.

In February 2016, FASB issued ASU 2016-02 regarding accounting for leases. ASU 2016-02 requires recognition of rights and obligations arising from lease contracts as assets and liabilities on the balance sheets. ASU 2016-12 is effective for the Institute's fiscal year ending September 30, 2020. The Institute is evaluating the impact this standard will have on its financial statements and disclosures.

In August 2016, FASB issued ASU 2016-14 regarding presentation of financial statements of not-for-profit organizations. Among other requirements, ASU 2016-14 requires additional disclosures regarding the classification of expenses and the liquidity and availability of funds, and modifies the reporting of net assets. ASU 2016-14 is effective for the Institute's fiscal year ending September 30, 2019. The standard will not affect the recognition of financial statement elements. The Institute is evaluating the impact this standard will have on the presentation of the financial statements and disclosures.

In August 2016, FASB issued ASU 2016-15. The standard addresses the classification of certain transactions within the statement of cash flows. ASU 2016-15 is effective for the Institute's fiscal year ending September 30, 2020. The Institute is evaluating the impact this standard may have on its financial statements and disclosures.

In January 2017, FASB issued ASU 2017-02, which clarifies the model used by not-for-profit entities to evaluate the possible consolidation of investments in limited partnerships (and limited liability companies that are similar to limited partnerships). The new standard also affirms the FASB's intent to retain that not-for-profit "portfolio-wide" fair value option under its new investment recognition and measurement rules. ASU 2017-02 is effective for the Institute's fiscal year ending September 30, 2018. The Institute is evaluating the impact this standard may have on its financial statements and disclosures.

In March 2017, FASB issued ASU 2017-07. The standard requires bifurcation of net periodic cost related to postretirement benefits into service cost, which may be included in operations, and other components, which must be reported outside of operations. ASU 2017-07 is effective for the Institute's fiscal year ending September 30, 2020. The Institute is evaluating the impact this standard may have on its financial statements and disclosures.

C. Contributions Receivable, net

Contributions receivable consist of unconditional promises to give to the Institute in the future. Contributions receivable are initially recorded at fair value, including a discount to the present value of the future cash flows at an appropriate credit risk-adjusted rate, and are classified in Level 3 of the valuation hierarchy described in Note K. Discount rates on outstanding contributions at September 30, 2017 and 2016 range from 0.74% to 4.56%.

Contributions receivable are expected to be collected as follows at September 30, 2017 and 2016:

	2017	2016
Within one year	\$ 83,132	\$ 50,730
Between one year and five years	139,142	125,726
More than five years	42,156	46,540
Gross contributions receivable Less:	264,430	222,996
Unamortized discounts	9,978	10,314
Allowance for uncollectible contributions	212	284
Net contributions receivable	\$ 254,240	\$ 212,398

Net contributions receivable carried the following restrictions at September 30, 2017 and 2016:

	2017	2016
Endowment Other purpose and/or time restrictions	\$ 183,954 70,286	\$ 128,806 83,592
Net contributions receivable	\$ 254,240	\$ 212,398

At September 30, 2017 and 2016, net contributions receivable of \$150,151 and \$183,631, respectively, were due from board members, their estates, and charitable entities founded by board members.

D. Investments

Investments consisted of the following at September 30, 2017 and 2016:

16
78,866
23,353
6,711
8,994
32,099
00,649
(2,294)
28,378

The Institute engages a number of outside investment managers to manage portions of its investment portfolios, which include an investment pool and other separately managed portfolios.

Below is a description of the holdings included within each investment classification:

- *Short-term investments* consist primarily of cash and cash equivalents invested in prime, U.S. government, and government agency money-market funds, as well as deposits with financial institutions.
- *Fixed-income securities* consist primarily of debt instruments issued by corporate or sovereign entities in both U.S. and foreign markets and investments in funds that hold such instruments.
- Equity securities consist primarily of investments in publicly traded corporate equities in globally diversified public markets including domestic, developed international, emerging markets and investments in funds that hold such investments. Investment managers invest according to each manager's particular investment strategy.
- Alternative securities consist primarily of investments in funds other than private equity and
 real assets in which redemption options and/or distributions are determined by the respective
 investment managers. Alternative securities managers pursue returns through a variety of
 strategies such as high yield and distressed credit, long/short equity, event-driven, and
 relative value. Managers invest and trade in various securities and financial instruments,
 including publicly traded and privately issued common and preferred shares of domestic and
 foreign companies, corporate debt, bonds, swaps, options, futures contracts and commodities.
- Private equity consists of investments in limited partnership interests that invest primarily in the securities of privately held companies. Investment managers utilize leveraged buyout and

venture capital strategies in a wide variety of industries and company sizes. Distributions from these investments are made either in-kind as distributions of publicly tradeable equity securities after initial public offerings, or in cash after liquidation of the underlying securities by the investment manager.

- Real assets consist primarily of investments in limited partnerships that invest in foreign and/or domestic real estate and/or energy sectors and/or domestic timber industries. Real estate consists primarily of illiquid investments in residential and commercial real estate assets, projects or land, and notes receivable secured by real estate. Such holdings are either held directly or in partnership funds. Energy holdings consist primarily of illiquid investments in oil and gas exploration and production or materials mining businesses, as well as related oil and gas services businesses, held in limited partnerships. Timber holdings consist primarily of illiquid investments in timber land and harvesting businesses held in limited partnerships.
- *Derivatives*, *net* consist of options in which the Institute directly transacts to manage equity risks of certain investments and interest and currency futures of minor value.

Investments were held as follows at September 30, 2017 and 2016:

	2017	2016
Investment pool	\$ 2,613,272	\$ 2,193,480
Separately invested endowments	44,306	34,928
Trusts, annuities, and other	740,490	799,970
Total investments	\$ 3,398,068	\$ 3,028,378

At September 30, 2017 and 2016, endowment investments were \$2,641,050 and \$2,217,372, respectively. At September 30, 2017, and 2016, other investments included \$10,396 and \$48,259, respectively, held in separately invested accounts as required by donors and/or sponsors.

Investment return consisted of the following for the years ended September 30, 2017 and 2016:

	2017			2016		
Interest and dividend income Net realized (losses)/gains Net unrealized gains	\$	47,634 (10,034) 363,872	\$	34,322 107,437 60,140		
Total investment return	\$	401,472	\$	201,899		

E. Deferred United States Government Billings

The Institute's contract with NASA provides for the reimbursement of certain employee benefit costs incurred but not yet billed to the JPL contract. Therefore, the Institute has recorded deferred United States government billings related to the unfunded postretirement benefit obligation, accrued vacation, and workers' compensation liabilities attributable to JPL, as the Institute is able to recover these amounts through future charges to JPL contracts. Although these deferred billing amounts may not be currently funded, and therefore may need to be funded as part of future NASA budgets, the Institute has the contractual right to require that such funding be made available at the time these employee benefit liabilities become payable by the Institute.

Deferred United States government billings related to deferred reimbursements of the following liabilities at September 30, 2017 and 2016:

	2017	2016
Unfunded postretirement benefit obligation Accrued vacation	\$ 272,131 71,814	\$ 300,376 67,046
Accrued worker's compensation expense Total deferred United States	3,576 \$\psi\$ 247.521	3,956
government billings	\$ 347,521	\$ 371,378

F. Property, Plant, and Equipment, net

Property, plant, and equipment consisted of the following at September 30, 2017 and 2016:

	2017		2016
Land and land improvements	\$	70,923	\$ 67,799
Buildings and building improvements		1,115,284	1,064,918
Equipment		560,188	577,899
Construction in progress		112,503	70,462
Less: accumulated depreciation		(946,294)	(918,618)
Total property, plant, and equipment, net	\$	912,604	\$ 862,460

Depreciation expense for the years ended September 30, 2017 and 2016 was \$66,276 and \$65,048, respectively.

G. Bonds and Notes Payable

Bonds and notes payable are uncollateralized, general obligations of the Institute and consisted of the following at September 30, 2017 and 2016:

		Maturi	Interest rate ty 2017 / 2016	Outsta 2017	anding 2016
Bonds payable:		Maturi	ty 2017/2010	2017	2010
Taxable bonds:					
Series 2016		2116	4.28%	\$ 150,000	\$ 150,000
Series 2015		2045	4.32%	400,000	400,000
Series 2011		2111	4.70%	350,000	350,000
California Educational Facilities Authority (CEFA)					
tax-exempt revenue bonds:					
2006 Series A, with variable rates		2036	0.92% / 0.85%	82,500	82,500
2006 Series B, with variable rates		2036	0.85% / 0.84%	82,500	82,500
Series 1994, with variable rates		2024	0.85% / 0.89%	30,000	30,000
Total bonds payable, gross				1,095,000	1,095,000
Unamortized original issue premiums/discounts					
and issuance costs, net				(10,935)	(11,128)
Total bonds payable, net				1,084,065	1,083,872
Notes payable:	Maxim	um			
Variable rate facilities:					
General working capital and capital projects:					
Bank of America revolving bank credit facility	\$ 100,0	00 2017	1.55% / 0.80%	75,000	70,000
Bank of America revolving bank credit facility	50,0	00 2017	-	-	-
Bank of New York Mellon money market loan program	50,0	00 None	-	-	-
JPMorgan Chase revolving bank credit facility	50,0	00 2017	- / 0.68%	-	1,633
JPMorgan Chase revolving bank credit facility	100,0	00 2020	1.57% / -	6,200	-
U.S. Bank revolving bank credit facility	50,0	00 2017	1.45% / 0.84%	50,000	50,000
Wells Fargo revolving bank credit facility	50,0	00 2020	1.59% / 0.87%	33,633	50,000
Supplemental liquidity for variable rate debt:					
Northern Trust revolving bank credit facility	100,0	00 2018	-	-	-
Wells Fargo revolving bank credit facility	50,0	00 2020	-		
Total notes payable				164,833	171,633
Total bonds and notes payable, net				\$1,248,898	\$1,255,505

As of September 30, 2017, the Institute had seven unsecured revolving lines of credit available (collectively, the "Lines of Credit"), consisting of six unsecured revolving bank credit facilities and one unsecured revolving money market loan program. The Institute has internally-mandated aggregate borrowing limits under the Lines of Credit as follows: \$100,000 for borrowings to finance working capital, \$100,000 for borrowings to finance acquisitions of real estate and temporary funding for capital projects, and \$200,000 for borrowings secured to preserve liquidity.

The line of credit from Bank of New York Mellon is uncommitted. Maturity dates for individual advances made under this line of credit are determined at the time advances are made.

A JPMorgan Chase revolving bank credit facility with a permitted maximum draw of \$50,000 was terminated effective September 30, 2017. There was no outstanding balance at September 30, 2017. A Bank of America revolving bank credit facility with a permitted maximum draw of \$50,000 was terminated effective August 31, 2017. There was no outstanding balance at September 30, 2017.

Subsequent to September 30, 2017 the U.S. Bank revolving bank credit facility's permitted maximum draw was increased from \$50,000 to \$100,000 and the maturity date was extended to 2020.

The Institute is required to comply with financial covenants in certain line of credit agreements, including maintaining minimum ratios of unrestricted cash and investments to total adjusted debt outstanding. As of September 30, 2017, the Institute was in compliance with all of its required financial covenants.

Under certain circumstances, the CEFA Series 1994, 2006 Series A, and 2006 Series B variable rate revenue bonds, which have contractual maturities commencing in 2024, could fail to be remarketed, requiring the Institute to repurchase the outstanding bonds totaling approximately \$195,000. Therefore, those bonds have been classified as repayable in the year ending September 30, 2017 in the following table.

Future principal repayments on bonds and notes payable were as follows at September 30, 2017:

Year Ending September 30	Amount			
2018	\$ 359,833			
2019	-			
2020	-			
2021	-			
2022	-			
Thereafter	 900,000			
Total	\$ 1,259,833			

As disclosed in Note B, the Institute uses an interest rate swap to manage the interest rate exposure of the 2006 Series A and B variable rate revenue bonds. Under the terms of the agreement, which expires October 1, 2036, the Institute pays the counterparty a fixed interest rate of 3.549% and receives a variable rate, indexed at 67% of one-month LIBOR (0.83% at September 30, 2017), on a \$165,000 underlying notional principal amount.

In September 2016, the Institute issued \$150,000 in Series 2016 taxable bonds. At the issuance date, the Institute deposited \$91,600 of the proceeds in an escrow fund to purchase noncallable notes, bills, and bonds issued by the U.S. Department of the Treasury to be held in trust to provide for interest and principal payments to the holders of the Institute's \$80,000 in CEFA 2009 Series tax-exempt revenue bonds ("2009 Bonds") until the 2009 Bonds' planned redemption in 2019. This advance refunding legally defeased the 2009 Bonds and resulted in a loss on retirement of debt of \$10,158, which is reflected in non-operating changes in unrestricted net assets in the statement of activities.

H. Temporarily and Permanently Restricted Net Assets

Temporarily restricted net assets were available for the following purposes at September 30, 2017 and 2016:

	2017		2016	
Educational and research funds	\$	105,917	\$ 137,843	
Contributions receivable		70,286	83,592	
Capital projects		828	962	
Life income and annuity funds		30,263	30,364	
Endowments		650,262	513,627	
Total temporarily restricted net assets	\$	857,556	\$ 766,388	

Permanently restricted net assets were available for the following purposes at September 30, 2017 and 2016:

	2017	2016	
Student loan funds	\$ 18,723	\$ 18,317	
Contributions receivable	183,954	128,806	
Life income and annuity funds	54,617	87,249	
Endowments	1,369,863	1,202,731	
Total permanently restricted net assets	\$ 1,627,157	\$ 1,437,103	

I. Endowment

Endowment net assets are comprised of donor-restricted and board-designated funds held for long-term investment that support educational, research, and general operating activities of the Institute. All endowment assets are held in the investment pool unless special considerations or donor stipulations require that they be invested separately. Gift annuities, beneficial interests, contributions receivable, and unexpended endowment distributions that are subject to remaining purpose restrictions are not considered endowment net assets.

Pursuant to its interpretation of the Uniform Prudent Management of Institutional Funds Act ("UPMIFA") as enacted in California, the Institute classifies the following as permanently restricted net assets: the original value of initial gifts to permanent endowments, the original value of subsequent gifts to permanent endowments, and the value of accumulations to permanent endowments made in accordance with the applicable donor gift instrument at the time the accumulation is added to the fund. The remaining portions of donor-restricted endowment funds that are not classified as permanently restricted net assets are classified as temporarily restricted net assets until those amounts are appropriated for expenditure by the Institute in a manner consistent with the standard of prudence prescribed by UPMIFA and Institute policies and expended accordingly.

The Institute's endowment spending policy includes a Board of Trustees-approved endowment spending formula which takes into consideration the prior year's spending, inflation factors, and endowment growth. In addition, in accordance with UPMIFA, when determining the annual amount to be made available for distribution to the operating budget each year, the Board of Trustees also considers the following factors:

- The purpose of each donor-restricted endowment fund
- The duration and preservation of each fund
- General economic conditions
- The possible effects of inflation and deflation
- The expected total return from income and the appreciation of investments
- Other resources of the Institute
- The investment policies of the Institute

Any excess of endowment spending over current-year investment income and gains (losses) is funded by prior years' accumulated investment return. The Institute appropriates endowment funds for expenditures based on current spending rates and, if applicable, the incurrence of specific expenditures in accordance with donors' purpose restrictions.

The Institute invests endowment assets targeted to earn an average annual total return that exceeds inflation by at least the amount required to support the endowment spending. Total return includes both capital appreciation/depreciation (realized and unrealized gains/losses) and investment income (including interest, dividends, and royalties). The Institute targets a diversified asset allocation, including investments in both public markets and in alternative investments, within risk constraints deemed to be prudent.

The portion of endowment available for spending that is transferred to operating accounts each year is shown as endowment spending distributed in the statements of activities. Any endowment spending

available for expenditure but not distributed remains invested in the Institute's endowment and is included in non-operating changes to net assets in the statements of activities.

Endowment net assets consisted of the following at September 30, 2017 and 2016:

September 30, 2017	Uni	restricted	mporarily estricted	rmanently Restricted	Total
Donor-restricted endowment funds	\$	(18,406)	\$ 631,296	\$ 1,369,863	\$ 1,982,753
Board-designated endowment funds		636,457	 18,966	 	 655,423
Total endowment net assets	\$	618,051	\$ 650,262	\$ 1,369,863	\$ 2,638,176
September 30, 2016					
Donor-restricted endowment funds	\$	(41,121)	\$ 507,063	\$ 1,202,731	\$ 1,668,673
Board-designated endowment funds		576,183	6,564	-	582,747
Total endowment net assets	\$	535,062	\$ 513,627	\$ 1,202,731	\$ 2,251,420

Changes in endowment net assets for the years ended September 30, 2017 and 2016 were as follows:

	Uni	restricted	nporarily estricted	rmanently estricted	Total
October 1, 2015	\$	571,466	\$ 501,386	\$ 1,041,757	\$ 2,114,609
Investment return:					
Investment income		9,544	12,925	110	22,579
Net appreciation in market value		58,380	 79,179	673	138,232
Total investment return		67,924	92,104	783	160,811
Contributions and pledge payments		-	734	91,372	92,106
Additions to board-designated endowments		24,985	-	-	24,985
Available for expenditure		(57,334)	(72,736)	(652)	(130,722)
Redesignations, reclassifications, and other		(71,979)	(7,861)	 69,471	 (10,369)
September 30, 2016	\$	535,062	\$ 513,627	\$ 1,202,731	\$ 2,251,420
Investment return:				 	
Investment income		10,908	21,464	755	33,127
Net appreciation in market value		102,094	200,883	 7,075	310,052
Total investment return		113,002	222,347	7,830	343,179
Contributions and pledge payments		-	400	153,823	154,223
Additions to board-designated endowments		24,800	12,000	-	36,800
Available for expenditure		(47,796)	(92,679)	(783)	(141,258)
Redesignations, reclassifications, and other		(7,017)	(5,433)	6,262	 (6,188)
September 30, 2017	\$	618,051	\$ 650,262	\$ 1,369,863	\$ 2,638,176

Redesignations, reclassifications, and other includes the effects of changes in donor restrictions or Institute designations and certain endowment management costs.

Under Accounting Standards Codification 958, for accounting purposes the Institute must maintain the historical values of donor-restricted endowment funds as permanently restricted net assets even in cases where the fair values of those funds are less than historical values. Such deficits are recorded as reductions of unrestricted net assets. The aggregate deficits for such funds were \$16,246 and \$34,336 at September 30, 2017 and 2016, respectively, and are recorded in unrestricted net assets. Such deficits reverse with market value appreciation. Reversals of these deficits increase unrestricted net assets.

J. Postretirement and Postemployment Benefits

The Institute provides postretirement health and life insurance benefit plans to eligible retirees and their dependents. The Institute's obligation related to these benefits is actuarially determined based on a September 30 measurement date. The Institute also provides defined contribution retirement plans, which are described in Note B.

Components of the funded status of postretirement benefits reported in the Institute's balance sheets and changes therein were as follows for the years ended September 30, 2017 and 2016. Additional detail regarding the JPL and Campus-related portions of the funded status of postretirement benefits is provided at the end of this note.

	2017	2016
Change in the accumulated postretirement benefit obligation:		
Benefit obligation at beginning of year	\$ 460,339	\$ 400,995
Service cost	12,486	10,375
Interest cost	17,147	18,019
Benefits paid	(14,373)	(14,275)
Actuarial (gain)/loss	(8,903)	45,225
Benefit obligation at end of year	466,696	460,339
Changes in plan assets:		
Fair value of plan assets at beginning of year	44,629	21,243
Return on plan assets	6,631	3,080
Employer contributions	35,679	34,581
Benefits paid	(14,373)	(14,275)
Fair value of plan assets at end of year	72,566	44,629
Funded status	\$ (394,130)	\$ (415,710)

Benefits for campus retirees and their dependents are funded on a pay-as-you-go basis. Benefits for JPL retirees and their dependents are funded by NASA according to an accrual accounting approach based on the Federal Acquisition Regulation. JPL-related contributions in excess of benefits paid are held in a trust for the benefit of JPL retirees and are invested according to the related plan's investment policies. At September 30, 2017 and 2016, trust investments consisted of short-term

investments and non-publicly traded collective trust funds and mutual funds. Short-term investments are classified in level 1 of the valuation hierarchy described in Note K, and the collective trust funds and mutual funds, which have readily determinable fair values, are classified within level 2 of that hierarchy.

Trust investments were held as follows at September 30, 2017 and 2016:

	2017	2016	
Short-term investments	\$ 366	\$ 223	
Collective trust funds	21,873	13,395	
Mutual funds	 50,327	31,011	
Total	\$ 72,566	\$ 44,629	

Net periodic postretirement benefit cost was as follows for the years ended September 30, 2017 and 2016:

	2017		2016	
Components of net periodic postretirement benefit cost:				
Service cost	\$	12,486	\$	10,375
Interest cost		17,147		18,019
Expected return on plan assets		(3,131)		(1,683)
Amortization of prior year service credit		(26,305)		(28,188)
Amortization of loss		6,958		4,544
Net periodic benefit cost	\$	7,155	\$	3,067

The statements of activities include the effects of changes in funded status that are not otherwise recognized in net periodic postretirement benefit cost. The effect related to JPL for the years ended September 30, 2017 and 2016 was a decrease of \$28 and an increase of \$47,613, respectively, in both JPL direct expense and revenue and in deferred U.S. government billings, as any cost associated with this adjustment related to JPL is contractually recoverable from NASA. The effect of those changes for the Campus was a decrease of \$6,972 and \$19,859 in unrestricted net assets for the years ended September 30, 2017 and 2016, respectively, and is recorded in non-operating changes in unrestricted net assets in the statements of activities.

At September 30, 2017 and 2016, the differences recognized in unrestricted net assets between cumulative net periodic postretirement benefit cost, less cumulative contributions, and funded status were as follows:

	2017	2016
Amounts recognized in unrestricted net assets:		
Prior service credit	\$ (38,007)	\$ (44,384)
Net loss	30,250	29,655
Cumulative amounts recognized in unrestricted		
net assets	\$ (7,757)	\$ (14,729)

Any actuarial deferrals resulting from changes in the accumulated postretirement benefit obligation are amortized over the average future working lifetime of Institute employees. An estimated prior service credit of \$26,305 and actuarial loss of \$5,532 will be amortized into net periodic benefit cost during the year ending September 30, 2018.

The following weighted-average assumptions were used to determine the Institute's net periodic benefit cost under the plans for the years ended September 30, 2017 and 2016:

	2017	2016
Discount rate	3.80%	4.60%
Discount rate for service cost	4.10%	4.80%
Expected return on plan assets	5.75%	5.75%
Health care cost trend rate	7.50%	7.50%

To develop the expected long-term rates of return on assets noted above, the Institute considers the historical returns and future expectations for each asset class, as well as the asset allocation of the retirement plan's investment portfolio. Estimated future return was based on expected returns for various asset categories. The evaluation of the historical and future returns resulted in the selection of 5.75% for the expected return on plan assets.

The following weighted-average assumptions were used to determine the Institute's obligation under the plans at September 30, 2017 and 2016:

	2017	2016
Discount rate	4.00%	3.80%
Discount rate for service cost	4.10%	4.10%
Health care cost trend rate	7.25%	7.50%

The Institute's postretirement medical benefit plans provide a substantial portion of the Institute's retirees and their eligible dependents awards of defined-dollar credits that are available to be used by retirees for medical premiums and other eligible medical expenses. The defined-dollar credits may be

changed in future years at the Institute's discretion. Certain grandfathered retirees and eligible dependents remain eligible for future medical benefits at no cost through an Institute-sponsored plan. The cost of these benefits is expected to increase in the future according to health care cost trend rates. The assumed health care cost trend rate is 7.25% in 2018, and annual rates are assumed to decrease approximately 0.25% per year until 2029, after which healthcare cost is assumed to increase 4.25% in all future years.

A one-percentage point change in assumed health care cost trend rates would have the following effects:

	 l% rease	1% Decrease		
Effect on the total of service and interest cost components	\$ 51	\$	(44)	
Effect on accumulated postretirement benefit obligation	\$ 986	\$	(871)	

A substantial majority of the above effects would be related to JPL and therefore would result in corresponding changes in amounts expected to be recoverable from NASA.

At September 30, 2017, the estimated future benefit payments are as follows:

Year Ending						
September 30	Campus		JPL		Total	
2018	\$ 4	,510	\$ 1	3,936	\$	18,446
2019	4	,652	1	3,943		18,595
2020	4	,909	1-	4,370		19,279
2021	5	5,210	1-	4,995		20,205
2022	5	,256	1	4,977		20,233
2023-2027	30	,160	8	2,402	1	112,562

Additional detail regarding the JPL and Campus-related portions of the funded status of postretirement benefits and changes therein for the years ended September 30, 2017 and 2016, is as follows:

	Campus	\mathbf{JPL}	Total
September 30, 2017			
Benefit obligation at end of year	\$ 121,998	\$ 344,698	\$ 466,696
Fair value of plan assets at end of year		72,566	72,566
Funded status	\$ (121,998)	\$ (272,132)	\$ (394,130)
September 30, 2016			
Benefit obligation at end of year	\$ 115,334	\$ 345,005	\$ 460,339
Fair value of plan assets at end of year		44,629	44,629
Funded status	\$ (115,334)	\$ (300,376)	\$ (415,710)

California Institute of Technology Notes to Financial Statements September 30, 2017 and 2016 (Dollars in Thousands)

K. Fair Value

Fair value is defined as the price that the Institute would receive upon selling an asset or would pay to settle a liability in an orderly transaction between market participants. The Institute evaluates the fair value of financial instruments using an established hierarchy that ranks the inputs to valuation techniques used to measure fair value. Inputs refer broadly to the assumptions that market participants would use in such fair value determinations, including assumptions regarding various risks. A financial instrument's level within the fair value hierarchy is based on the least-transparent level of any input that is significant to the fair value measurement. The classification of financial instruments within the hierarchy is based upon the transparency of the inputs to valuation techniques used to measure fair value and does not necessarily correspond to the Institute's perceived risk of those instruments. The three levels of the fair value hierarchy are described below.

Level 1 fair value measurements are based upon unadjusted quoted prices for identical assets or liabilities in active, accessible markets. Market price data is generally obtained from exchange dealer markets.

Level 2 fair value measurements are generally based on quoted prices for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active, and model-based valuation techniques for which all significant assumptions are observable in the market or can be corroborated by observable market data for substantially the full term of the instruments. Inputs to Level 2 measurements include, but are not limited to, interest rates, credit risk adjustments, and prices for similar instruments, and are obtained from various sources, including market participants, dealers, and brokers.

Level 3 fair value measurements are those that use significant inputs that are unobservable. Assets and liabilities included in Level 3 primarily consist of investments in real assets that are valued by investment managers or the Institute using industry-standard methodologies, independent appraisals, and Institute models. The Institute regularly monitors the adequacy of these fair value measurements. Fair value measurements derived using specific unobservable quantitative inputs developed by the Institute were not significant for the years ended September 30, 2017 and 2016.

The Institute generally uses net asset value ("NAV") as a practical expedient to determine the fair value of investments in funds that do not have readily determinable fair values and either have certain specific attributes of investment companies or prepare their financial statements consistent with the measurement principles of investment companies. For these funds, net asset values are determined by each fund's general partner or investment manager and are based on appraisals or other estimates that include considerations such as the cost of the fund's securities, prices of recent significant placements of securities of the same issuer, and subsequent developments concerning the companies to which the securities relate. The fair value of investments valued at NAV as a practical expedient are excluded from the fair value hierarchy.

The following is a summary of the fair value of the Institute's financial instruments according to fair value level or NAV at September 30, 2017 and 2016:

	Level 1	Level 2	Level 3	NAV	Total		
September 30, 2017							
Investments:							
Short-term investments	\$ 273,900	\$ -	\$ -	\$ -	\$ 273,900		
Fixed-income securities	30,352	147,576	-	-	177,928		
Equity securities	665,295	194,536	25,118	475,483	1,360,432		
Alternative investments:				012 400	012 400		
Alternative securities	-	-	24.202	812,409	812,409		
Private equity Real assets	-	10 150	24,392	335,066	359,458 417,157		
Derivative assets	1,492	18,158	172,656	226,343	417,157 1,492		
Derivative liabilities	(4,708)	-	-	-	(4,708)		
Total investments	\$ 966,331	\$ 360,270	\$ 222,166	\$1,849,301	\$3,398,068		
Other assets and liabilities:							
Cash and cash equivalents	\$ 6,603	\$ -	\$ -	\$ -	\$ 6,603		
Beneficial interests	-	-	48,038	-	48,038		
Defined contribution plan assets	33,242	25,352	28,291	-	86,885		
Defined contribution plan liabilities	(32,792)	(25,295)	(28,281)	-	(86,368)		
Interest rate swap	-	(50,405)	-	-	(50,405)		
					2016		
	Level 1	Level 2	Level 3	NAV	Total		
September 30, 2016							
Investments:							
C1							
Short-term investments	\$ 178,866	\$ -	\$ -	\$ -	\$ 178,866		
		•	\$ -	\$ - -			
Fixed-income securities	30,749	192,604	<u>-</u>	-	223,353		
Fixed-income securities Equity securities		•	\$ - - 6,246	\$ - - 374,574			
Fixed-income securities Equity securities Alternative investments:	30,749	192,604	<u>-</u>	374,574	223,353 1,146,711		
Fixed-income securities Equity securities Alternative investments: Alternative securities	30,749	192,604	6,246	- 374,574 798,994	223,353 1,146,711 798,994		
Fixed-income securities Equity securities Alternative investments: Alternative securities Private equity	30,749	192,604 163,759 - -	- 6,246 - 5,537	798,994 276,562	223,353 1,146,711 798,994 282,099		
Fixed-income securities Equity securities Alternative investments: Alternative securities Private equity Real assets	30,749 602,132 - -	192,604	6,246	- 374,574 798,994	223,353 1,146,711 798,994 282,099 400,649		
Fixed-income securities Equity securities Alternative investments: Alternative securities Private equity Real assets Derivative assets	30,749 602,132 - - - 2,242	192,604 163,759 - -	- 6,246 - 5,537	798,994 276,562	223,353 1,146,711 798,994 282,099 400,649 2,242		
Fixed-income securities Equity securities Alternative investments: Alternative securities Private equity Real assets Derivative assets Derivative liabilities	30,749 602,132 - - - 2,242 (4,536)	192,604 163,759 - - 18,792 - -	5,537 131,597	798,994 276,562 250,260	223,353 1,146,711 798,994 282,099 400,649 2,242 (4,536)		
Fixed-income securities Equity securities Alternative investments: Alternative securities Private equity Real assets Derivative assets	30,749 602,132 - - - 2,242	192,604 163,759 - -	- 6,246 - 5,537	798,994 276,562	223,353 1,146,711 798,994 282,099 400,649 2,242		
Fixed-income securities Equity securities Alternative investments: Alternative securities Private equity Real assets Derivative assets Derivative liabilities Total investments Other assets and liabilities:	30,749 602,132 - - 2,242 (4,536) \$ 809,453	192,604 163,759 - - 18,792 - -	5,537 131,597	798,994 276,562 250,260	223,353 1,146,711 798,994 282,099 400,649 2,242 (4,536)		
Fixed-income securities Equity securities Alternative investments: Alternative securities Private equity Real assets Derivative assets Derivative liabilities Total investments	30,749 602,132 - - - 2,242 (4,536)	192,604 163,759 - - 18,792 - -	5,537 131,597	798,994 276,562 250,260	223,353 1,146,711 798,994 282,099 400,649 2,242 (4,536)		
Fixed-income securities Equity securities Alternative investments: Alternative securities Private equity Real assets Derivative assets Derivative liabilities Total investments Other assets and liabilities:	30,749 602,132 - - 2,242 (4,536) \$ 809,453	192,604 163,759 - - 18,792 - - \$ 375,155	6,246 - 5,537 131,597 - - \$ 143,380	798,994 276,562 250,260 - - \$1,700,390	223,353 1,146,711 798,994 282,099 400,649 2,242 (4,536) \$3,028,378		
Fixed-income securities Equity securities Alternative investments: Alternative securities Private equity Real assets Derivative assets Derivative liabilities Total investments Other assets and liabilities: Cash and cash equivalents	30,749 602,132 - - 2,242 (4,536) \$ 809,453	192,604 163,759 - - 18,792 - - \$ 375,155	5,537 131,597 - - \$ 143,380	798,994 276,562 250,260 - - \$1,700,390	223,353 1,146,711 798,994 282,099 400,649 2,242 (4,536) \$3,028,378		
Fixed-income securities Equity securities Alternative investments: Alternative securities Private equity Real assets Derivative assets Derivative liabilities Total investments Other assets and liabilities: Cash and cash equivalents Beneficial interests	30,749 602,132 - - 2,242 (4,536) \$ 809,453 \$ 6,374	192,604 163,759 - - 18,792 - - \$ 375,155	5,537 131,597 - - \$ 143,380 \$ - 73,341	798,994 276,562 250,260 - - \$1,700,390	223,353 1,146,711 798,994 282,099 400,649 2,242 (4,536) \$3,028,378 \$6,374 73,341		
Fixed-income securities Equity securities Alternative investments: Alternative securities Private equity Real assets Derivative assets Derivative liabilities Total investments Other assets and liabilities: Cash and cash equivalents Beneficial interests Defined contribution plan assets	30,749 602,132 - - 2,242 (4,536) \$ 809,453 \$ 6,374 - 26,916	192,604 163,759 18,792 \$ 375,155 \$ 24,147	5,537 131,597 - - \$ 143,380 \$ - 73,341 26,399	798,994 276,562 250,260 - - \$1,700,390	223,353 1,146,711 798,994 282,099 400,649 2,242 (4,536) \$3,028,378 \$6,374 73,341 77,462		

The fair value of assets held in trust for postretirement benefit plans, as disclosed in Note J, is excluded from the tables above.

At September 30, 2017 and 2016, additional detail regarding the Institute's investments valued using NAV by major investment category was as follows:

1411 by major mvesti			Ū	nfunded		Redemption Notice Period in	Lives in
	Fa	air Value	Con	nmitments	Redemption Frequency	days	years
September 30, 2017							
Equity securities							
Quarterly or less	\$	183,477	\$	-	Quarterly or less	7 to 180	-
Greater than quarterly		291,490		5,308	Annually to triennially	60 to 120	-
Not actionable		516		-	Not actionable	-	-
Alternative investments: Alternative securities							
Quarterly or less		120,671		-	Quarterly or less	60 to 90	-
Greater than quarterly		467,718		-	Semi-annually to triennially	30 to 90	-
Not actionable		224,020		146,274	Not actionable	-	up to 17
Private equity		335,066		195,441	Not actionable	-	up to 10
Real assets		226,343		84,958	Not actionable	-	up to 10
Total investments	\$	1,849,301	\$	431,981			
						Redemption Notice	
			U	nfunded		Period in	Lives in
	Fa	air Value	Con	nmitments	Redemption Frequency	days	years
September 30, 2016						·	·
Equity securities							
Quarterly or less	\$	120,086	\$	-	Quarterly or less	7 to 180	-
Greater than quarterly		253,972		-	Annually to triennially	60 to 120	-
Not actionable		516		-	Not actionable	-	-
Alternative investments:							
Alternative securities							
Quarterly or less		186,065		-	Quarterly or less	60 to 90	-
Greater than quarterly		414,023		750	Semi-annually to triennially	30 to 90	-
Not actionable		198,906		112,195	Not actionable	-	up to 17
Private equity		276,562		164,629	Not actionable	-	up to 10
Real assets		250,260		77,559	Not actionable	-	up to 10
Total investments	\$	1,700,390	\$	355,133			

In addition to the unfunded commitments noted above, at September 30, 2017 and 2016, the Institute was committed to invest an additional \$62,955 and \$54,789, respectively, in investments classified within the fair value hierarchy over approximately the next ten years.

The methods described above may produce fair value calculations that may not be indicative of net realizable value or reflective of future fair values. Alternative investments may not be readily marketable or redeemable, and may specify penalties for early withdrawal from the related funds. Furthermore, while the Institute believes its valuation methods are appropriate and consistent with those of other market participants, the use of different methodologies or assumptions to determine fair values of certain financial instruments could result in different estimates of fair value.

The following table is a summary of changes in the fair values of the Institute's Level 3 assets for the years ended September 30, 2017 and 2016:

		ginning alance	_	ifts and rchases		lles and aturities		ealized in/Loss		realized in/Loss		Ending Salance
September 30, 2017												
Investments:												
Equity securities	\$	6,246	\$	17,933	\$	(2,197)	\$	2,158	\$	978	\$	25,118
Alternative investments:												
Private equity		5,537		14,033		-		-		4,822		24,392
Real assets		131,597		63,325		(27,050)		(13,870)		18,654		172,656
Total investments	\$	143,380	\$	95,291	\$	(29,247)	\$	(11,712)	\$	24,454	\$	222,166
Other assets:												
Beneficial interests	\$	73,341	\$	19,339	\$	(40,511)	\$	-	\$	(4,131)	\$	48,038
Defined contribution plans		26,398		5,341		(4,242)		-		794		28,291
		ginning alance		ifts and rchases		lles and aturities		ealized in/Loss		realized in/Loss		Ending Salance
September 30, 2016		0										O
September 30, 2016 Investments:		0	Pu								В	O
-		0										O
Investments:	В	alance	Pu		M	aturities	Ga		Ga	in/Loss	В	alance
Investments: Equity securities	В	alance	Pu		M	aturities	Ga		Ga	in/Loss	В	alance
Investments: Equity securities Alternative investments:	В	alance	Pu	rchases -	M	aturities	Ga		Ga	in/Loss 42	В	6,246
Investments: Equity securities Alternative investments: Private equity	В	6,245	Pu	- 4,000	M	(41)	Ga	in/Loss - -	Ga	42 1,537	В	6,246 5,537
Investments: Equity securities Alternative investments: Private equity Real assets	\$ \$	6,245 - 143,102	Pu \$	- 4,000 13,366	M :	(41) - (11,819)	Ga	- - 1,650	Ga	42 1,537 (14,702)	\$ \$	6,246 5,537 131,597
Investments: Equity securities Alternative investments: Private equity Real assets Total investments	\$ \$	6,245 - 143,102	Pu \$	- 4,000 13,366	M :	(41) - (11,819)	Ga	- - 1,650	Ga	42 1,537 (14,702)	\$ \$	6,246 5,537 131,597

The Institute classifies defined contribution plan liabilities in the fair value hierarchy based upon the investments of the related plan assets. Accordingly, liabilities classified within Level 3 approximate

the value of plan investments that also are classified within Level 3, and increase or decrease in value according to contributions, withdrawals, vesting, and investment performance.

The Institute records transfers between levels in the current fiscal year when there is a change in circumstances that affects the liquidity of the assets and/or the ability to observe and measure the fair value. The Institute records such transfers based on the market value at the beginning of the reporting period. There were no transfers among levels during the years ended September 30, 2017 and 2016. During the years ended September 30, 2017 and 2016, unrealized losses related to Level 3 assets of (\$4,308) and unrealized gains of \$418 respectively, were recorded in non-operating gifts and pledges in the statements of activities. All other realized and unrealized gains related to Level 3 investments were recorded in non-operating investment return in excess of payout in the statement of activities. Unrealized gains and losses included in the statements of activities related to those Level 3 assets held at September 30, 2017 and 2016 were \$5,107 and (\$12,813), respectively.

The Institute uses an interest rate swap to manage the interest rate exposure of a portion of its variable rate debt. The value of the interest rate swap depends upon the contractual terms of, and specific risks inherent in, the instrument, as well as the availability and reliability of observable inputs. The interest rate swap is valued using observable inputs, such as quotations received from counterparties, dealers, or brokers, market prices for reference securities, credit curves, and assumptions for nonperformance risk, whenever available and considered reliable, and is therefore classified in Level 2 of the fair value hierarchy.

The Institute uses exchange-traded equity derivatives, including put and call options, to manage its market exposure related to certain equity exchange-traded funds. Balances and activities related to equity derivatives for the years ended September 30, 2017 and 2016 were as follows:

	2017			2016
Investments:				
Gross derivative assets	\$	1,492	\$	2,242
Gross derivative liabilities		(4,708)		(4,536)
Net amount	\$	(3,216)	\$	(2,294)
Notional value: assets	\$	88,825	\$	95,947
Notional value: liabilities		(182,950)		(195,957)
Investments pledged		106,658		111,423
Investment returns/(losses):				
Realized (losses)/gains	\$	(6,070)	\$	1,451
Unrealized losses		(1,352)		(5,926)
Net amount	\$	(7,422)	\$	(4,475)

L. Commitments and Contingencies

Contingencies

The Institute receives funding or reimbursement from agencies of the United States government for various activities that are subject to audit, and is a defendant in various legal actions incident to the conduct of its activities. Except as specifically discussed below, management does not expect that liabilities, if any, related to these audits or legal actions will have a material impact on the Institute's financial position. However, the settlement of audits or legal actions is subject to inherent uncertainties, and it is possible that such liabilities, if any, will differ materially from management's current expectations.

In 1997, the Institute was named as a potentially responsible party ("PRP") by NASA under the Comprehensive Environmental Response, Compensation, and Liability Act, as amended. As a PRP, the Institute may be jointly liable for contribution towards clean-up costs, estimated to be in excess of \$100,000, of the NASA/JPL Superfund site.

Officials of the Institute presently are not able to predict the impact, if any, that final resolution of this matter will have on the Institute's financial position or changes in its net assets. However, the Institute believes that it will have recourse to the United States government for any liabilities it may incur in connection with being named a PRP for that site.

Commitments

The Institute was committed under certain construction and services contracts in the amounts of approximately \$130,940 and \$81,074 at September 30, 2017 and 2016, respectively.

The Institute is a member of an international consortium that was organized to construct and operate an advanced telescope. At September 30, 2017 and 2016, the Institute was committed to provide cash totaling approximately \$67,000 and \$92,000, respectively, to the consortium over approximately the next seven years. Payments and other transfers related to this commitment are subject to certain contingencies.

The Institute's workers' compensation insurance carrier requires that the Institute maintain an unsecured letter of credit for claims that do not exceed certain deductible amounts. At September 30, 2017 and 2016, the amounts of the letter of credit facility were \$8,800 and \$9,400, respectively. The letter of credit was not used during the years ended September 30, 2017 and 2016, and therefore no liability has been recorded in the balance sheets.

The Institute is currently providing funding for the operation of certain local water treatment facilities, subject to reimbursement from NASA. Annual costs are not expected to exceed \$9,000.

The Institute leases equipment and buildings, primarily for JPL, under operating leases expiring at various dates through 2022. Rent expense incurred under operating lease obligations was \$10,315 and \$6,684 for the years ended September 30, 2017 and 2016, respectively.

At September 30, 2017, future minimum payments under operating leases of greater than one year in duration were as follows:

Year Ending September 30	An	nount
2018	\$	3,458
2019		2,486
2020		1,004
2021		537
2022		18
Total	\$	7,503

Approximately \$7,185 of the future minimum lease payments listed above is expected to be recoverable from JPL under the Institute's cost-reimbursable contract with NASA. The Institute rents housing, equipment, and building space to students, faculty, and other organizations under operating leases expiring at various dates through 2022. Rental income under operating leases was \$9,098 and \$9,421 at September 30, 2017 and 2016, respectively.

At September 30, 2017, minimum future rentals from operating leases of greater than one year in duration were as follows:

Year Ending September 30	A	mount
2018	\$	7,017
2019		3,705
2020		2,624
2021		2,619
2022		2,530
Total	\$	18,495

M. Supplemental Cash Flow Information

The following are additional supplemental disclosures related to the statements of cash flows:

	2017	2016
Cash paid during the year for interest, net of amounts capitalized	\$ 46,403	\$ 45,541
Non-cash investing and financing activities:		
Securities received to satisfy pledge payments	56,629	41,698
Securities and real estate received from beneficial interests	29,369	7,929
In-kind receipt of securities, property, plant, and equipment	3,944	12,051
Increase in accrued purchases of property, plant, and equipment	5,480	2,364
Decrease/(increase) in net amounts payable/receivable for pending investments transactions	47,556	(13,525)
Increase in conditional asset retirement costs and obligations	12,278	-

N. Subsequent Events

Subsequent events were evaluated through January 24, 2018, which is the date the financial statements were available to be issued.